

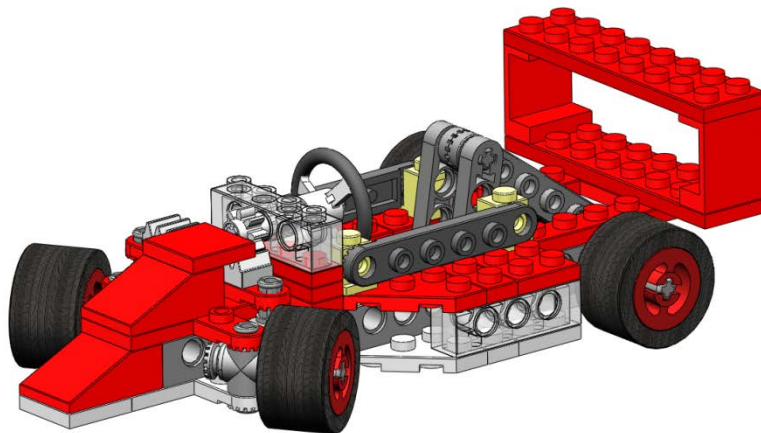
# SolidWorks® Building Blocks Tutorial

## Toy-Car

From the  
age of



until the  
age of


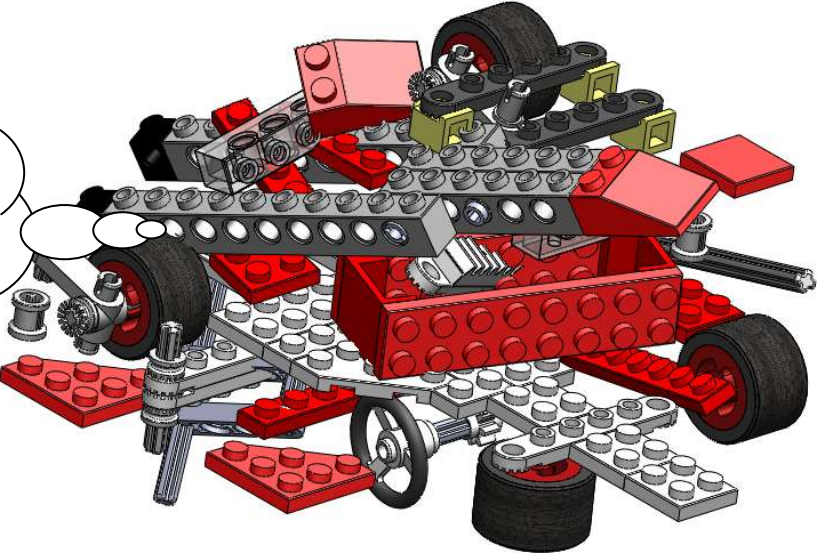






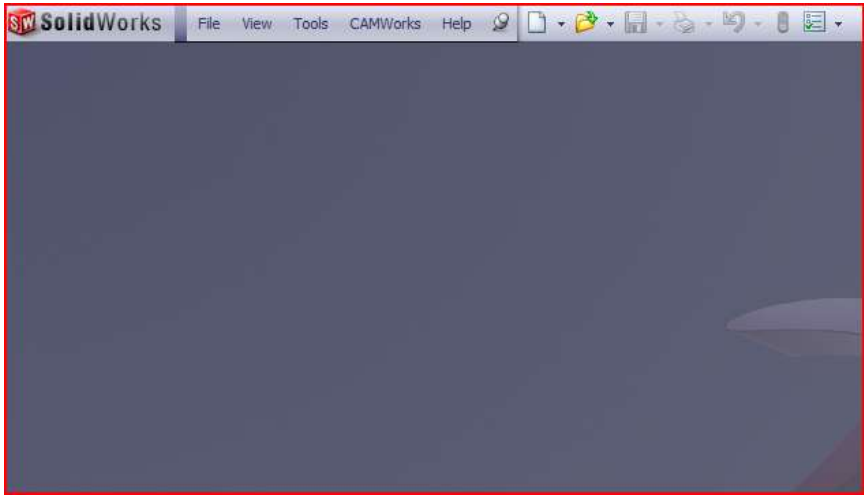
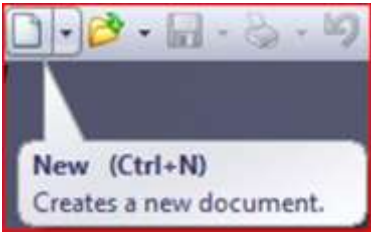


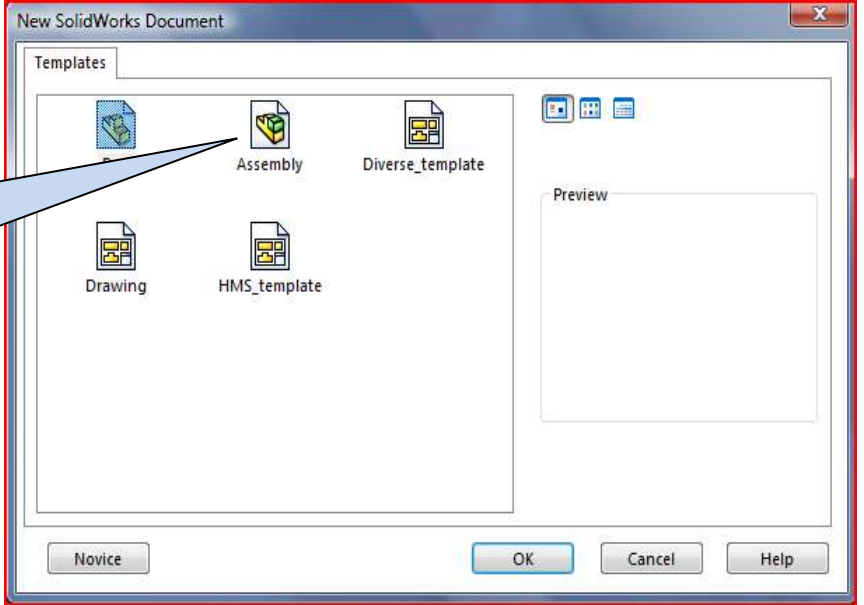
This tutorial was developed for SolidWorks Worldwide and may be used by anyone who needs to learn how to use the SolidWorks 3D CAD software. **Any other use of this tutorial or any portion there of is prohibited.** For any questions on this matter, please contact Jack van den Broek.

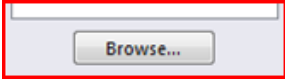
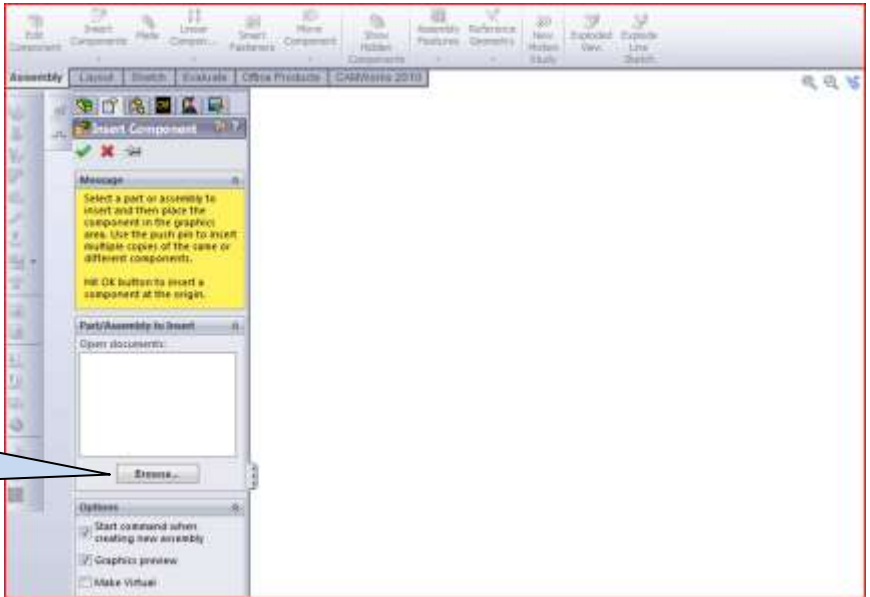
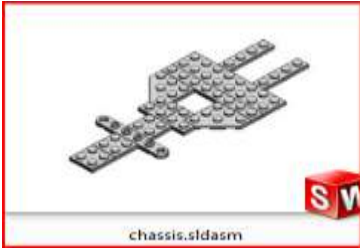
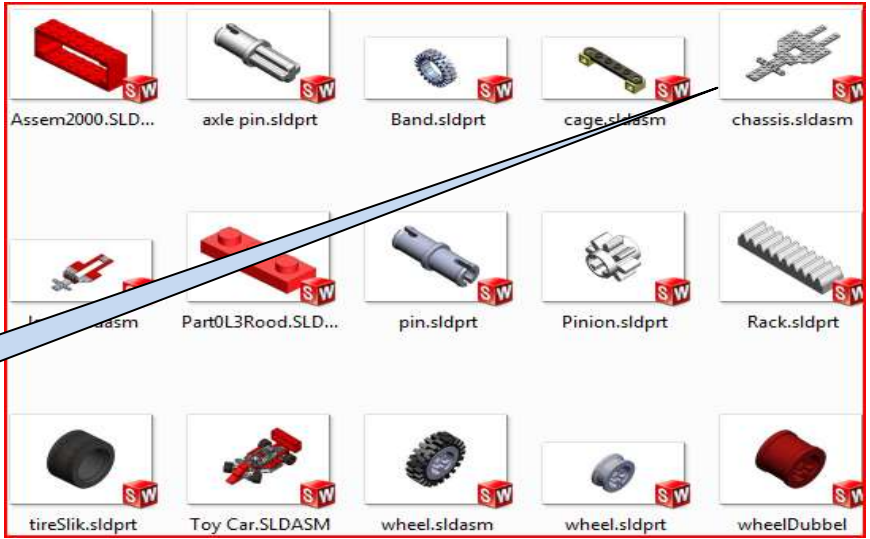
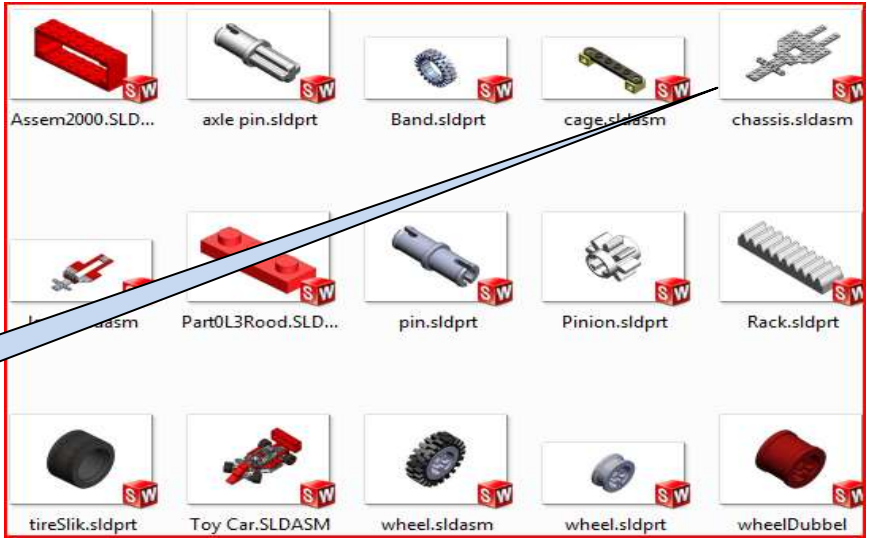

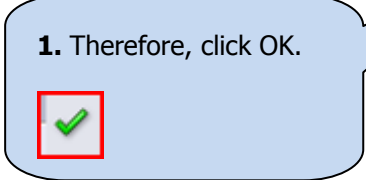
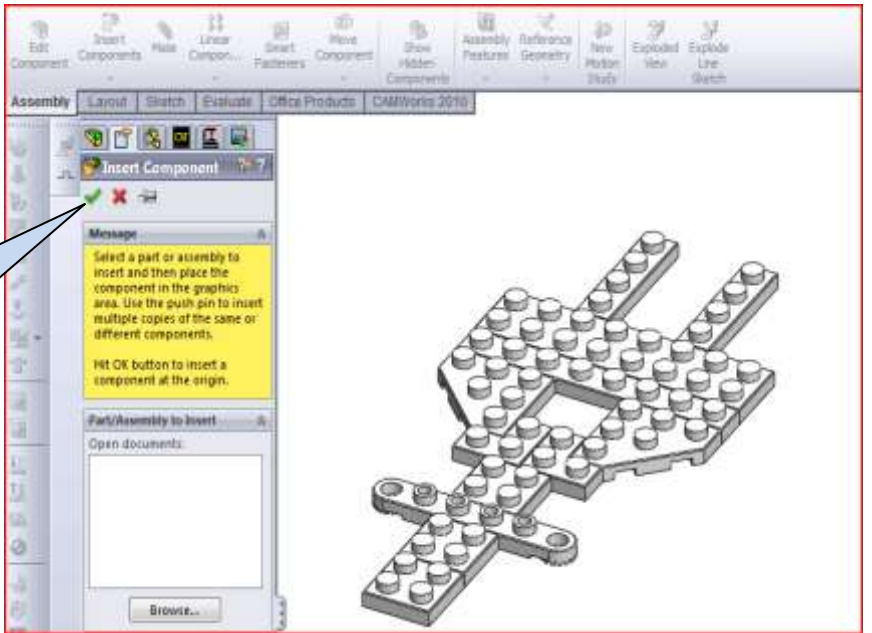
Initiative: Jack van den Broek (Technical school Dr. Knippenberg).

Adaptation to the educational level: Jack van den Broek.


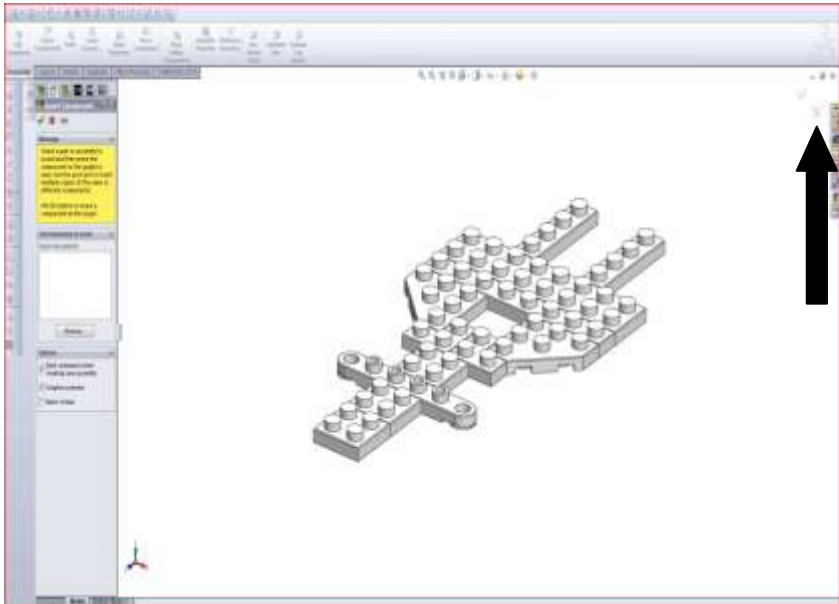

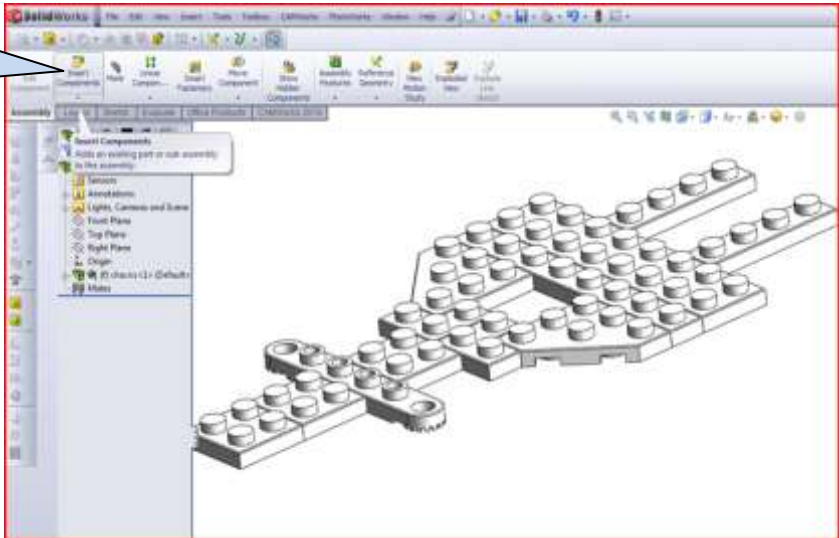

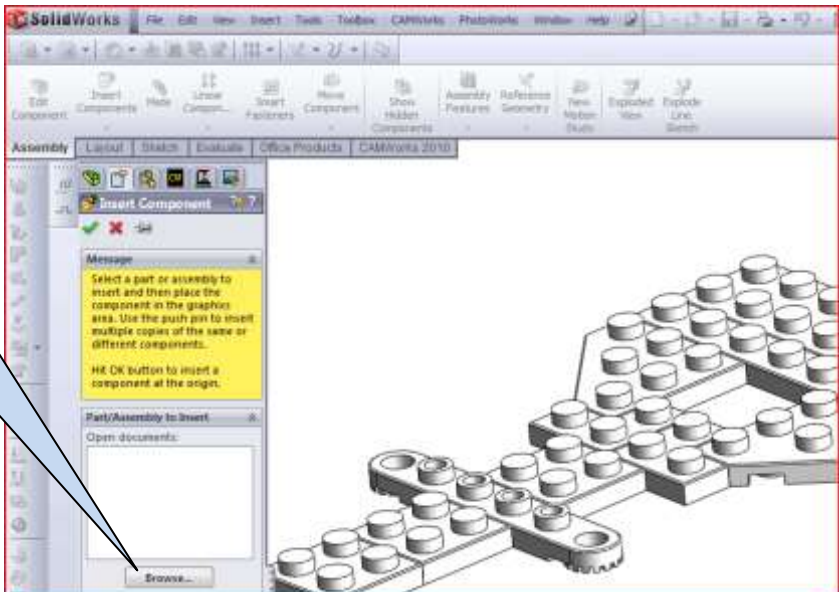
Realized by: Jack van den Broek.



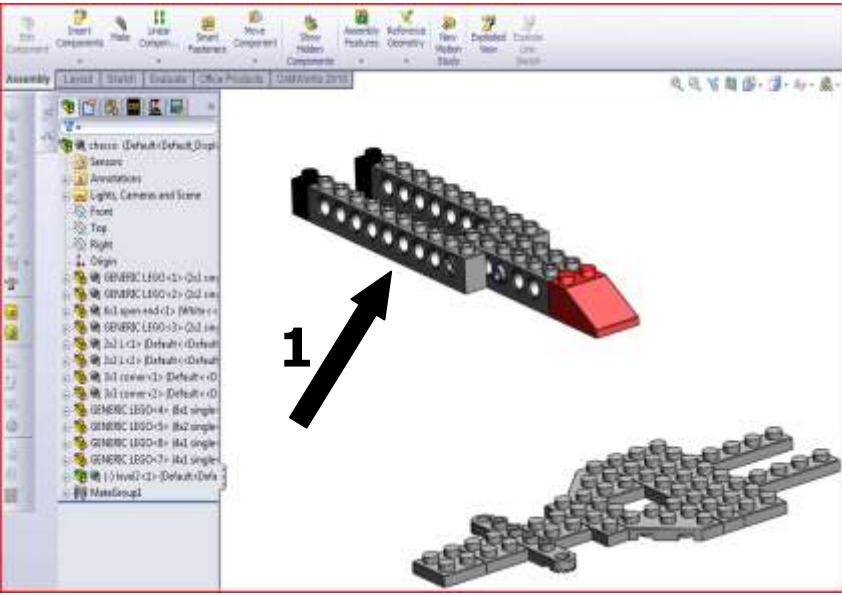

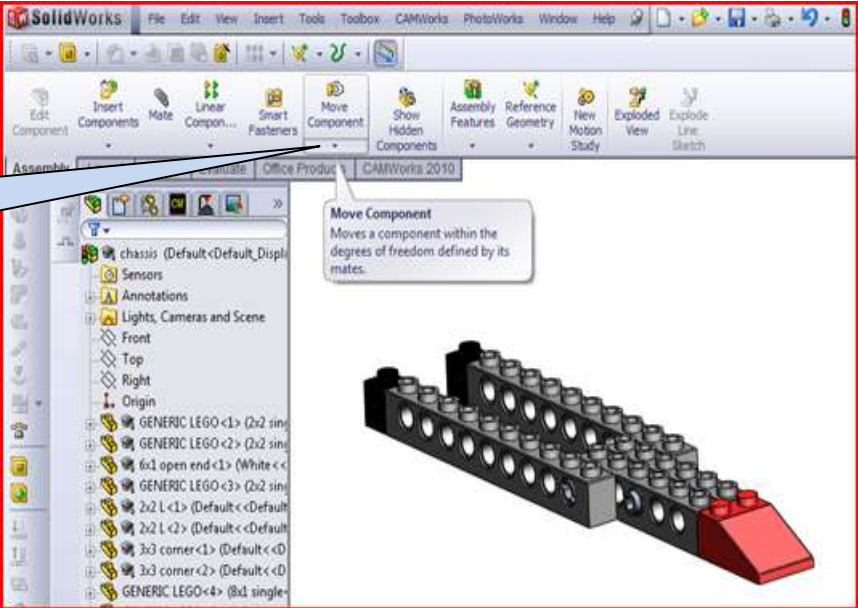
<p>We'll turn this pile of building blocks into a Toy Car!</p>  <p>You won't be alone; I'll help you by showing how to assemble the different pieces.</p> <p><b>Have fun!</b></p>	
 <p><b>Work plan:</b></p>	<p>Follow the instructions on the left side of the tutorial and always check the examples on the right side.</p> <p>Read carefully, and nothing can go wrong.</p> <p>Good luck!</p>
<p><b>1</b></p> <p>Start SolidWorks: To do so, double-click the icon</p>  <p>This icon is on your desktop.</p>  <p>If it's not on your desktop, ask your teacher for help!</p>	



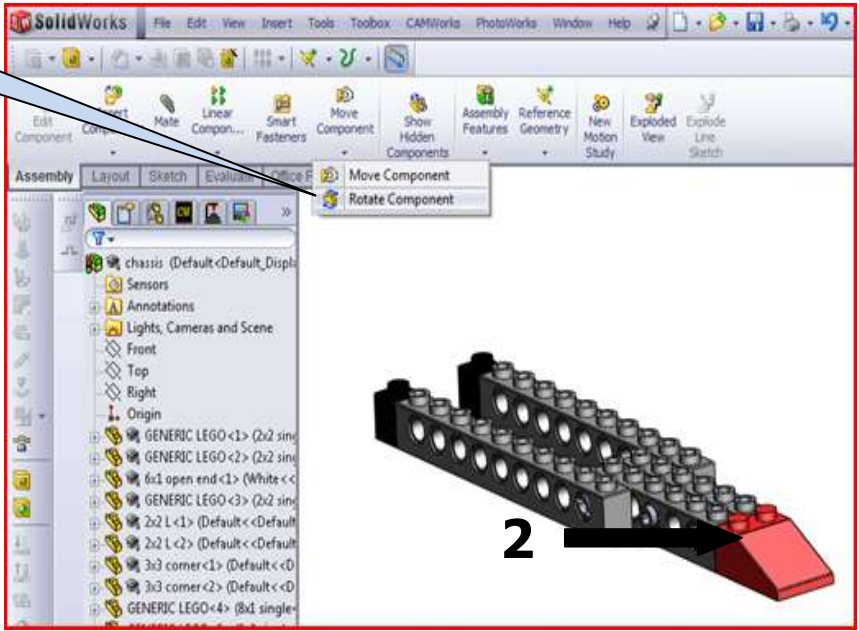


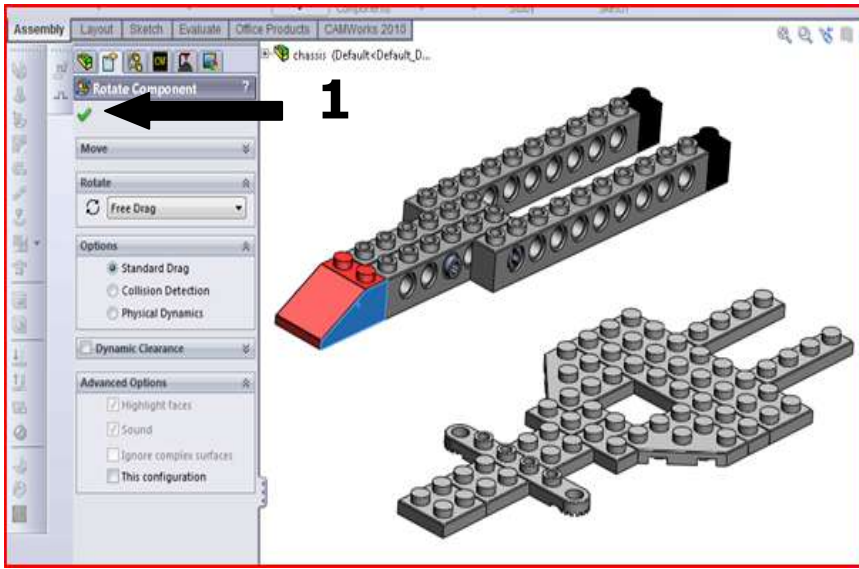
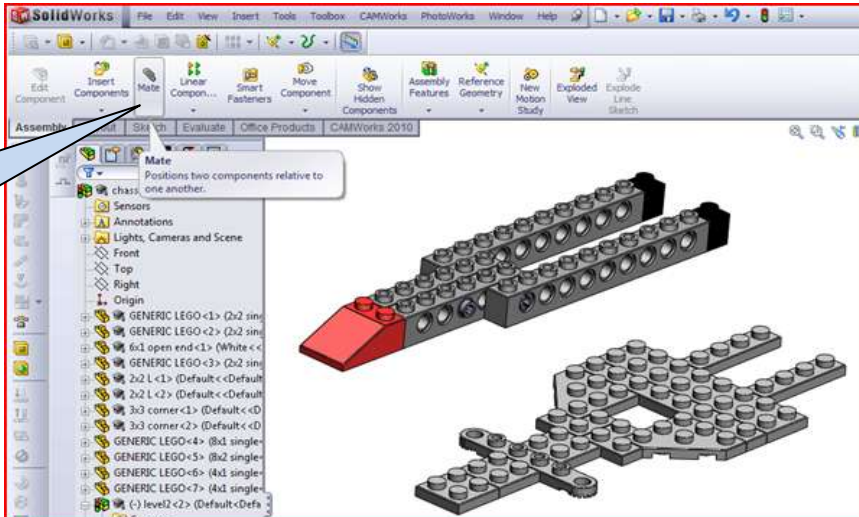
<p><b>2</b></p>	<p>If all goes well, the drawing application will open. It will look as in the illustration opposite.</p>	
<p><b>3</b></p>	<p>You are now going to open the assembly environment and will build your first model.</p> <p><b>1.</b> To do so, click the first button on the toolbar: <b>New</b>.</p> 	
<p><b>4</b></p>	<p><b>1.</b> When the menu is displayed, double-click:</p> <p>Double-click this item:</p>  <p>Assembly is a synonym of 'to build' or 'to construct'</p>	

<p><b>5</b></p> <p>If all has gone well again, the screen will look as displayed opposite.</p> <p>That's where we will build our Toy Car.</p> <p>We'll start with the bottom.</p> <p>It's already been built, but it is still in the warehouse.</p> <p><b>1.</b> To have a look in the warehouse, we click:</p>		
<p><b>6</b></p> <p>Locate the file:</p>  <p>chassis.sldasm</p> <p><b>1.</b> Double-click the icon!</p>		
<p><b>7</b></p> <p>The chassis will now be displayed onscreen, but it still sticks to your mouse!</p> <p>So you'll have to release it!</p> <p><b>1.</b> Therefore, click OK.</p> 		



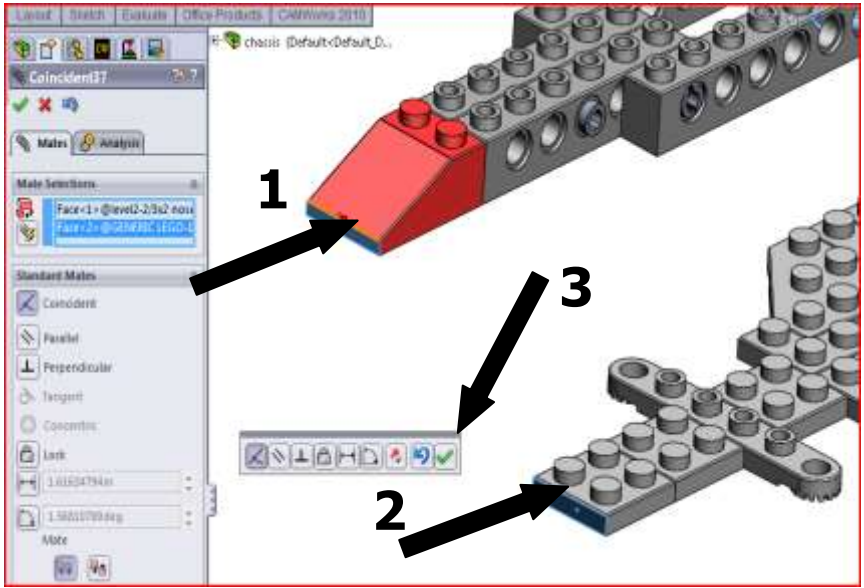

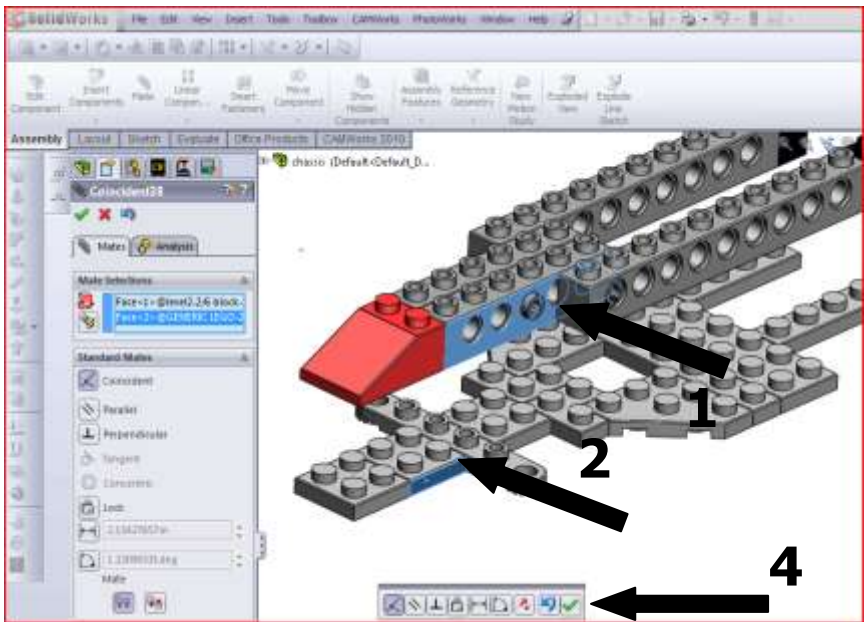

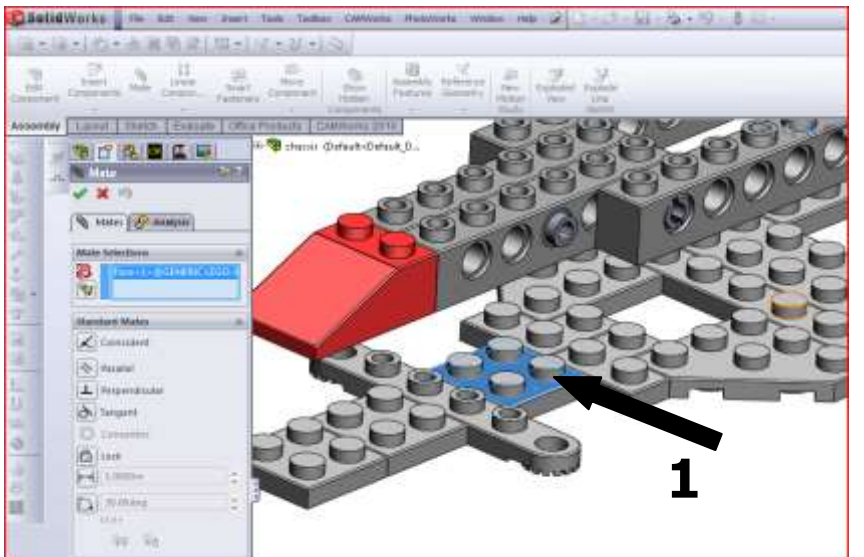


<p><b>8</b></p> <p>Once you've done that, the chassis is positioned exactly in the middle of the screen.</p> <p>We can now continue our construction (assembly).</p> <p>We're going back to the warehouse to retrieve the new parts.</p> <p><b>1.</b> First, click: </p> <p><u>Cancel!</u></p>	
<p><b>9</b></p> <p><b>1.</b> Press the left mouse button:</p> 	
<p><b>10</b></p> <p><b>1.</b> To have a look in the warehouse, please click:</p> 	



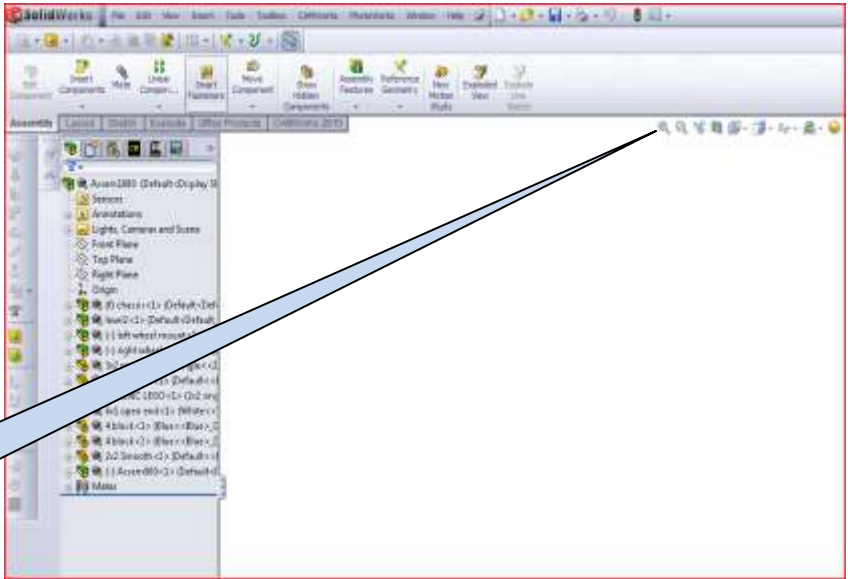

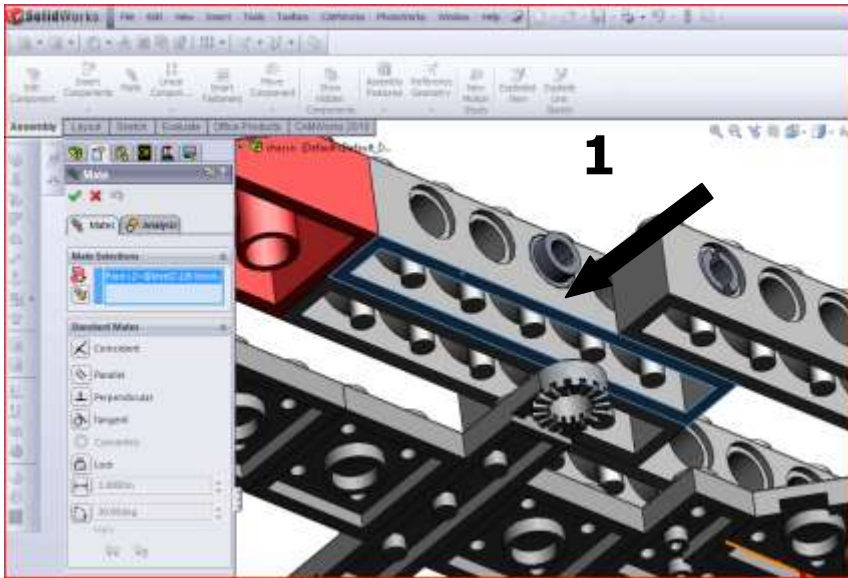
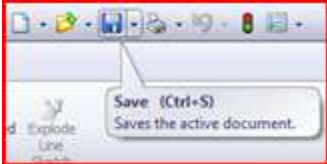
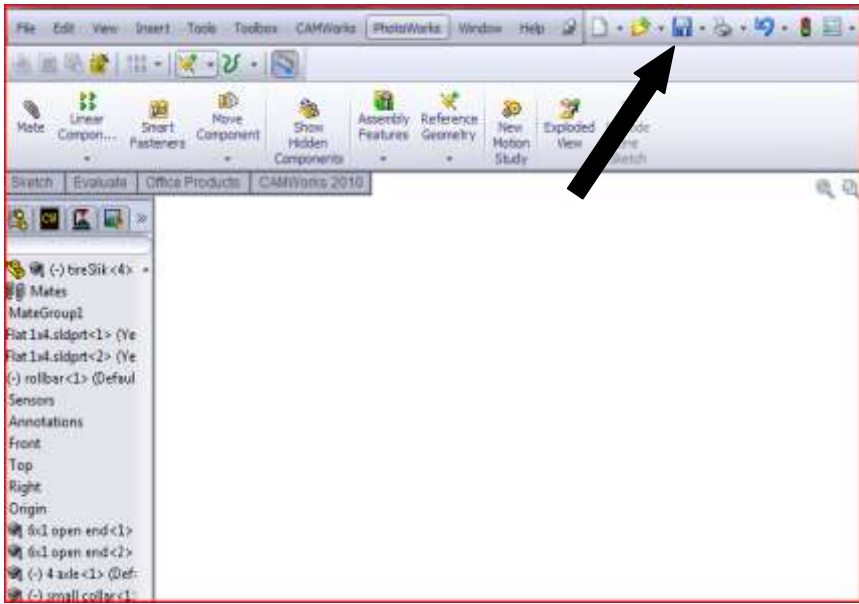
<p><b>11</b></p> <p>Double-click: <b>Level2.sldasm</b></p> <p>Which is in this combination!</p> 	
<p><b>12</b></p> <p><b>1.</b> Position the part as illustrated opposite and click the left mouse button.</p>	
<p><b>13</b></p> <p>We'll now rotate the part such that it's almost OK.</p> <p><b>1.</b> Click the arrow below:</p> 	


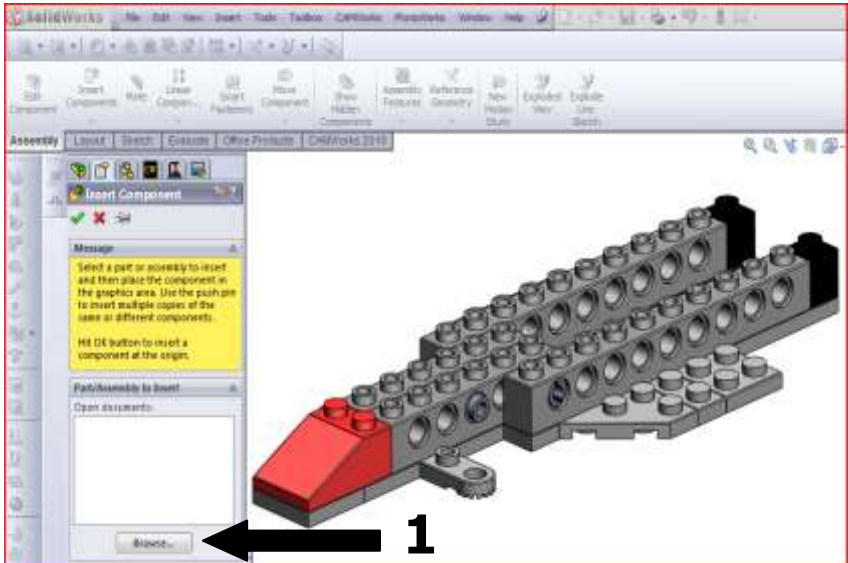
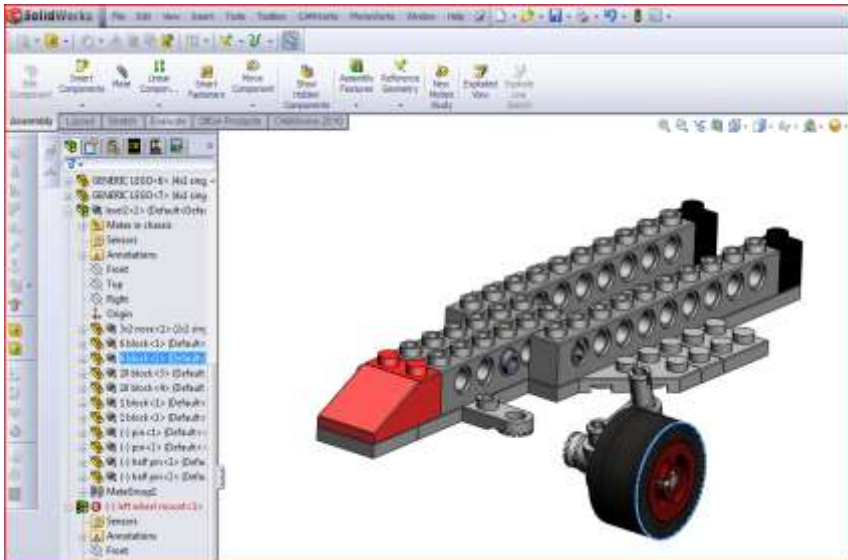

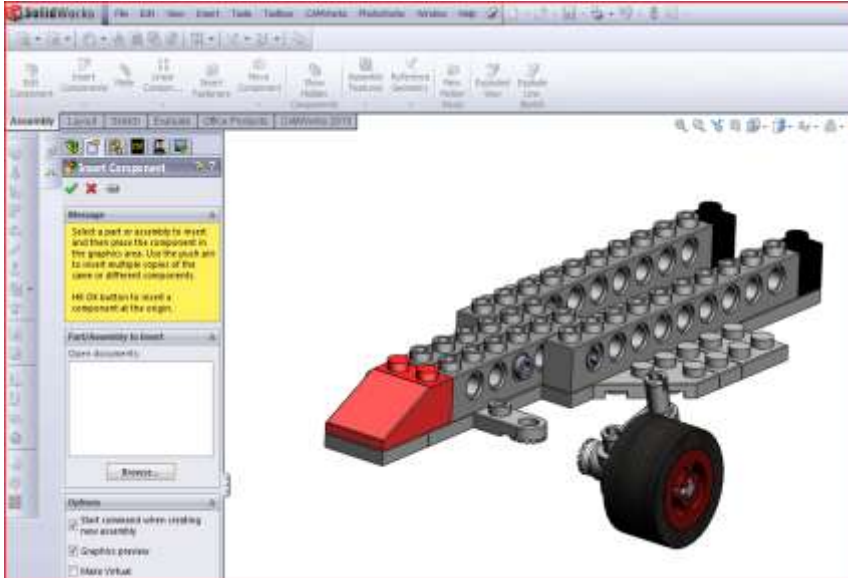
<p><b>14</b></p> <p>1. Click: <b>Rotate Component</b></p> <p>This command allows us to rotate the part!</p> <p>2. Click the nose to make it blue!</p>  <p>Press and hold the left mouse button.</p>  <p>You can now rotate the part.</p>	
<p><b>15</b></p> <p>Rotate and move the mouse until the part is positioned as illustrated opposite.</p>  <p>1. Once you're finished, click OK.</p> <p>That's the green check mark!</p> 	
<p><b>16</b></p> <p>We will now build the two parts on top of each other!</p> <p>1. Click Mate: <b>Mate</b></p> <p>This looks like a paperclip.</p> <p>This command allows you to put building blocks onto each other.</p> <p>(mounting) (constructing).</p>	


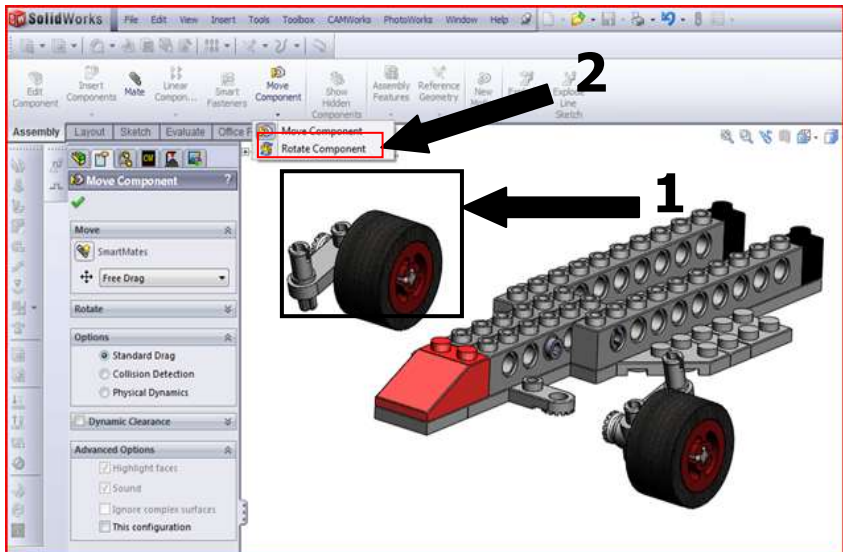


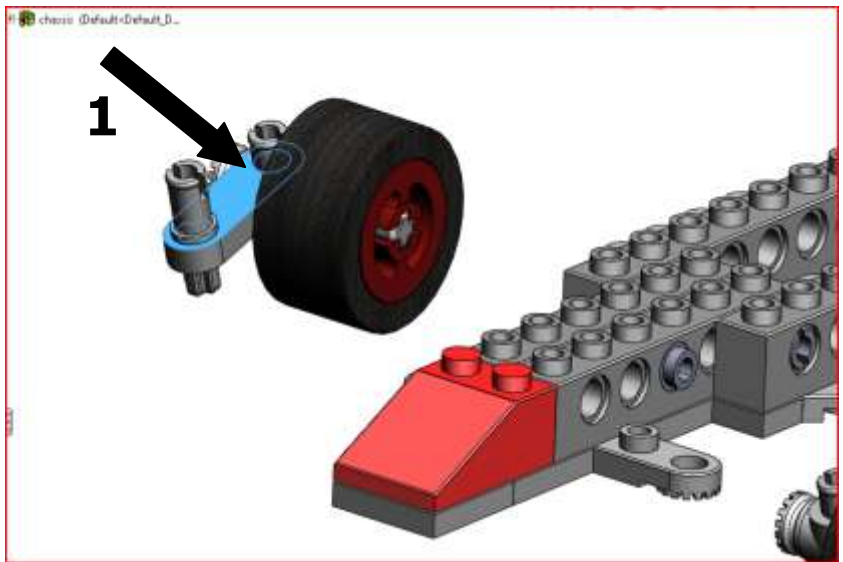


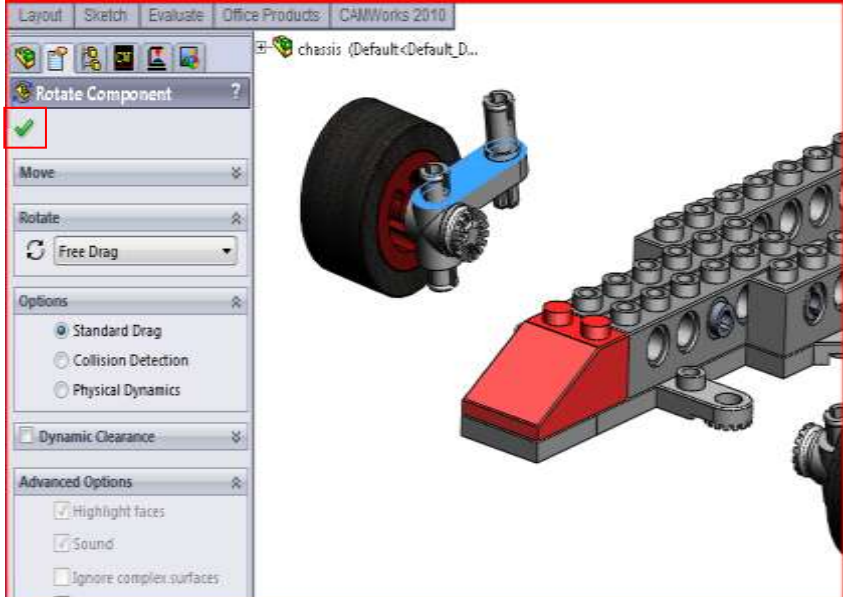


<p><b>17</b></p> <p>1. Click the front of the nose and it will turn blue.</p> <p> <b>You don't see things well? Use the scroll wheel to zoom in or out.</b></p> <p>2. Click the front of the chassis and it will turn blue as well.</p> <p>These fronts now must lie flush.</p> <p>3. To confirm this, click:</p> <p></p>	
<p><b>18</b></p> <p>1. Click on the side of the upper part, it will turn blue again.</p> <p>2. Click on the side of the chassis, it will become blue as well.</p> <p>3. These fronts now must lie flush.</p> <p>4. To confirm this, click:</p> <p></p>	
<p><b>19</b></p> <p>1. Click on the top of the lower part, it will turn blue again.</p> <p>2. Press and hold the mouse's scroll wheel, and move the mouse.</p> <p></p> <p>Try to put everything upside down!</p>	


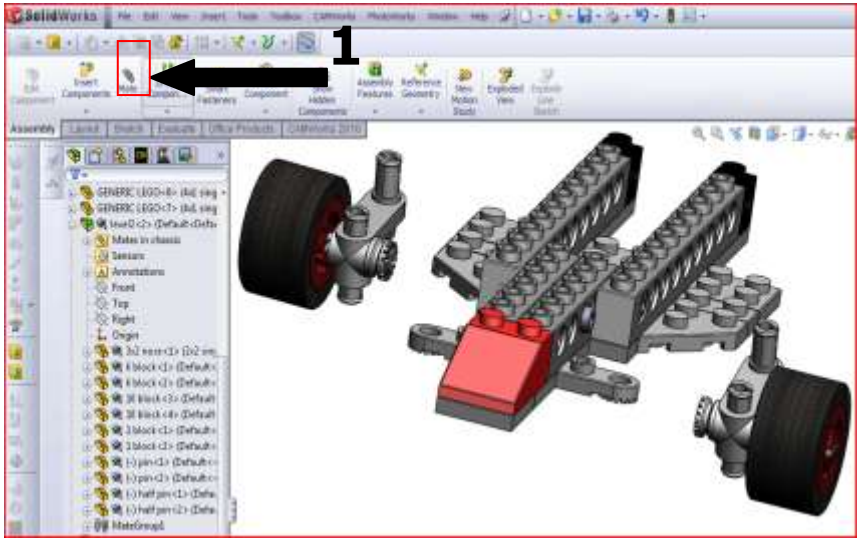

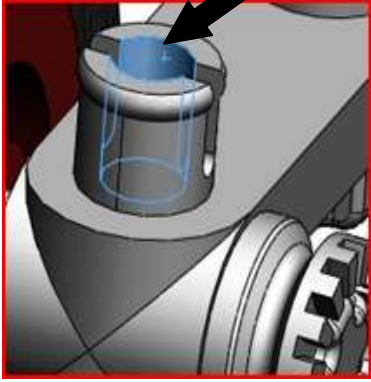
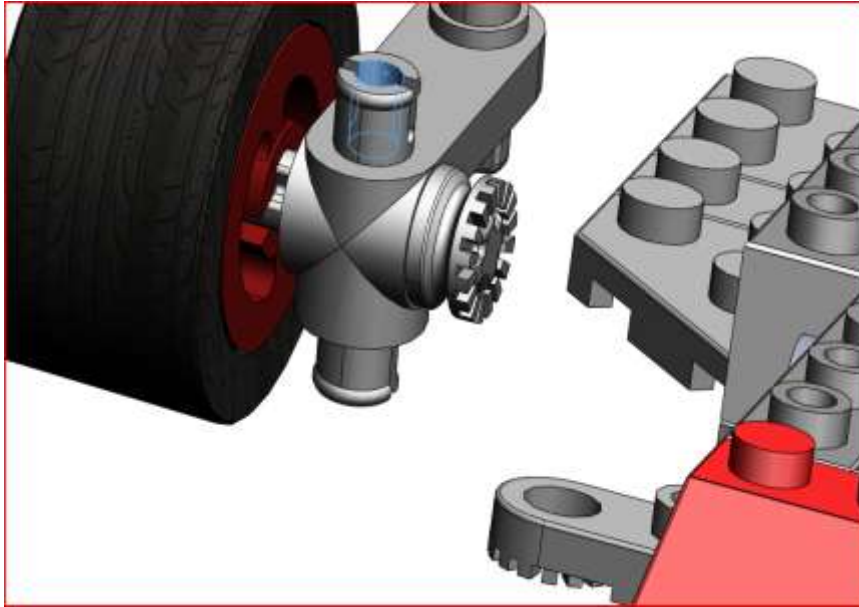


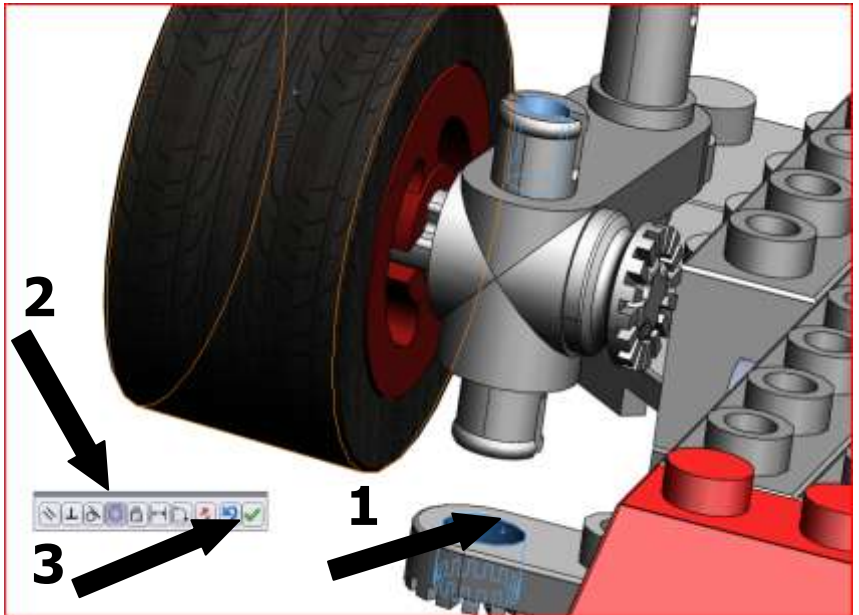



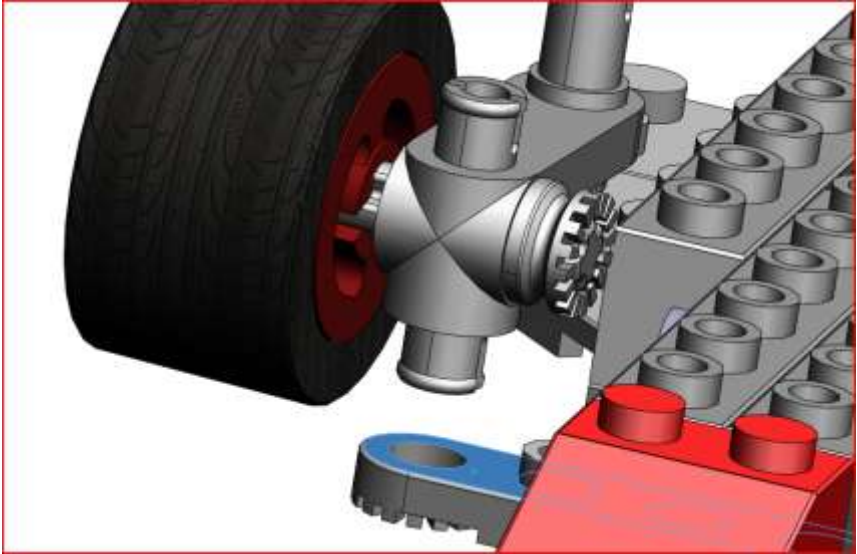
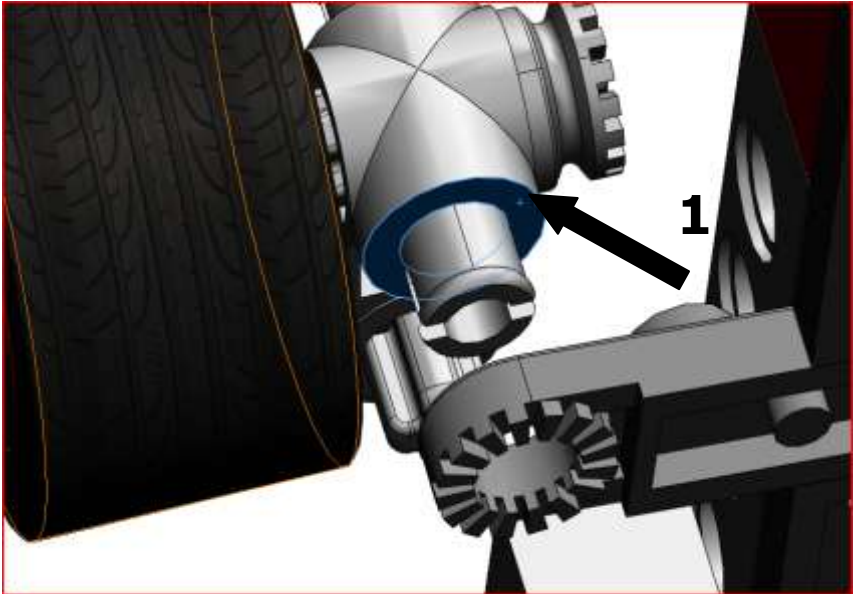

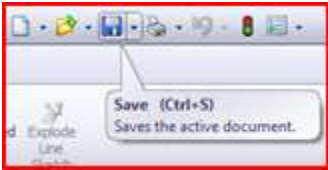
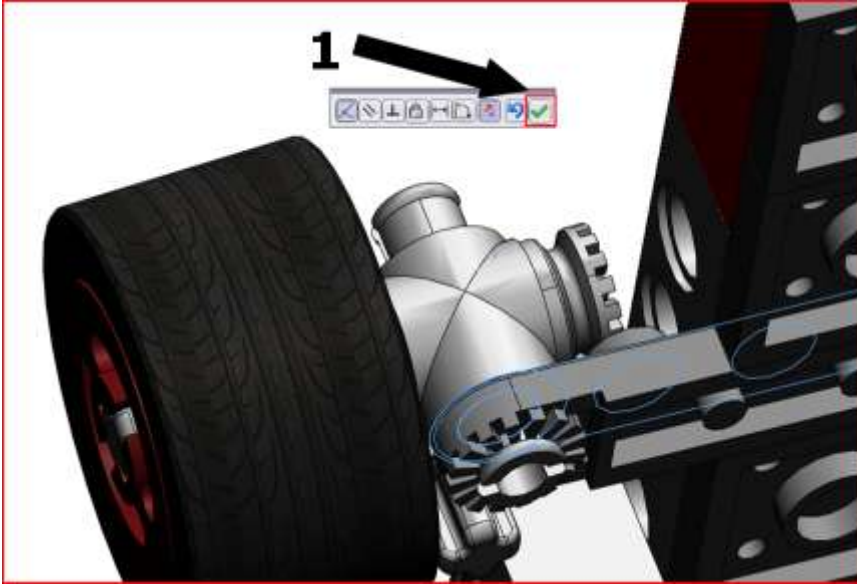
<p><b>20</b></p>  <p>You may incidentally turn the scroll wheel too much and possibly lose everything.</p> <p><b>YOU DON'T SEE ANYTHING ANYMORE!!</b></p> <p><b>No worry!</b></p> <p><b>1. Click: Zoom to Fit.</b></p> 	
<p><b>21</b></p>  <p>Everything will get back to normal again, at the same place as before.</p> <p><b>1. Now click the bottom of the upper part. It will turn blue again and both parts will immediately connect together.</b></p>	
<p><b>23</b></p> <p>Let's save our data for the sake of safety!</p>  <p>Click Save and name the file Tony-Kart.</p>	

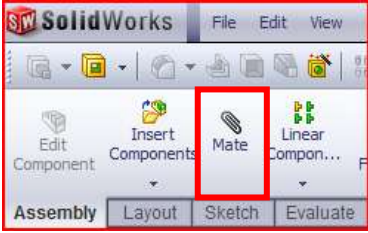
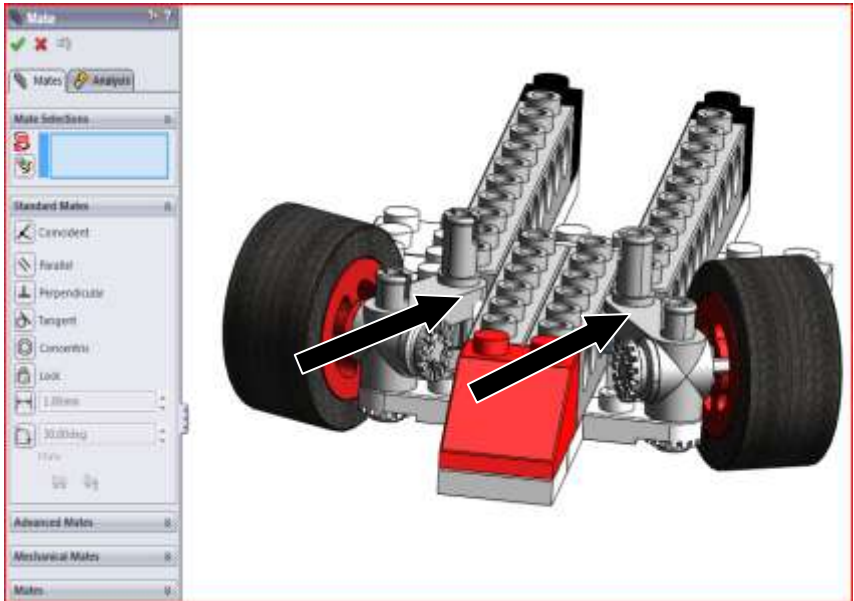


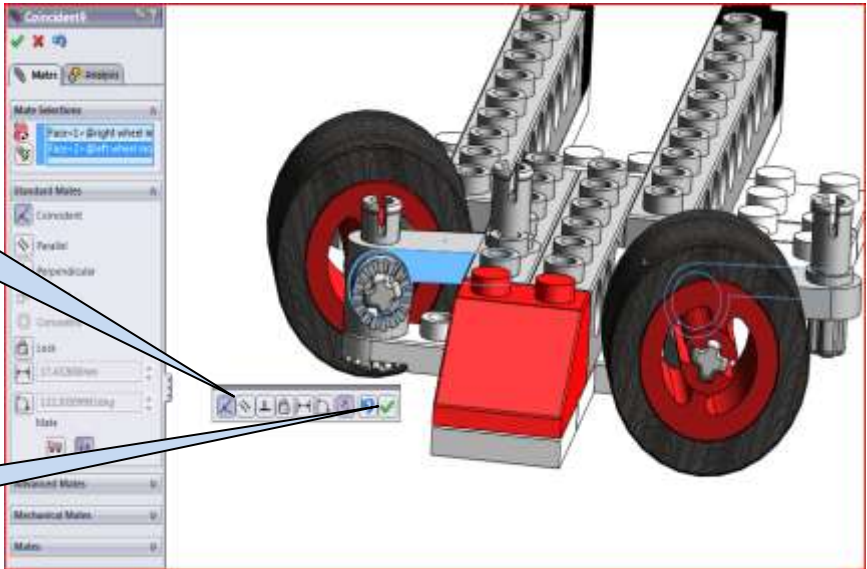

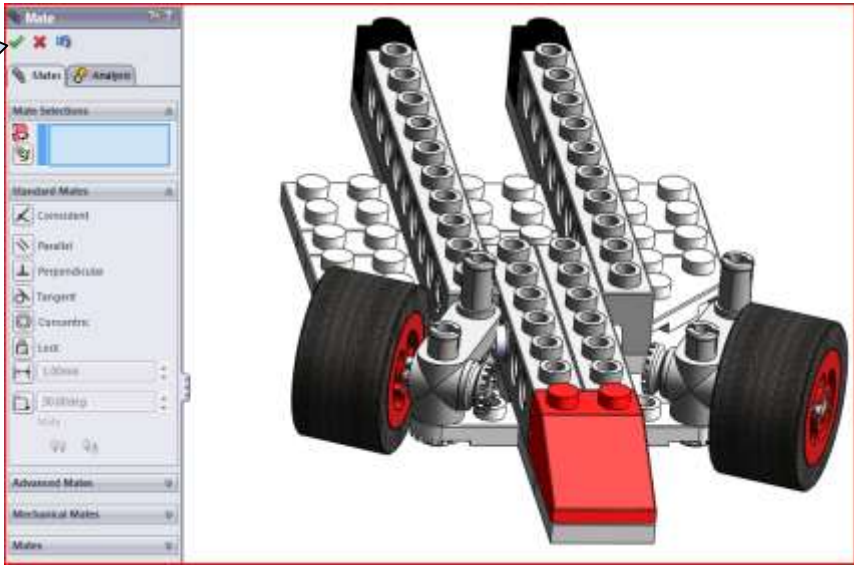
<p><b>24</b></p> <p>We'll go back again to the warehouse, to see if we can find any front wheels.</p>  <p><b>1.</b> Click Browse <input type="button" value="Browse..."/> to return to the warehouse.</p> <p>Let's search!!!</p> <p>Left wheel mount.sldasm</p> <p>Double-click this wheel.</p>	
<p><b>25</b></p> <p>If all went well, your screen now displays the frame and the left front wheel, as illustrated opposite.</p>	
<p><b>26</b></p> <p>We'll return to the warehouse to see if we can find the other front wheel.</p>  <p><b>1.</b> Click Browse... to return to the warehouse.</p> <p>Let's search!!! Right wheel mount.sldasm</p> <p>Double-click this wheel as well.</p>	

<p><b>27</b></p> <p>If all went well, your screen now displays the frame and both front wheels, as illustrated opposite.</p> <p><b>1.</b> But we also notice the right front wheel is not correctly positioned.</p> <p>We'll have to turn it again, as we did before.</p> <p><b>2.</b> Click the following button again: </p>	
<p><b>28</b></p> <p>This command allows us to rotate the part!</p> <p><b>1.</b> Click somewhere on the holder to make it blue!</p>  <p>Press and hold the left mouse button.</p>  <p>You can now rotate the part</p>	
<p><b>29</b></p> <p>Rotate and move the mouse until the part is positioned as illustrated opposite.</p>  <p><b>1.</b> Once you're finished, click OK.</p> <p>That's the green check mark!</p> 	

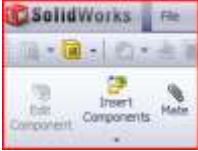
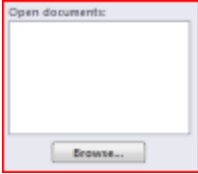
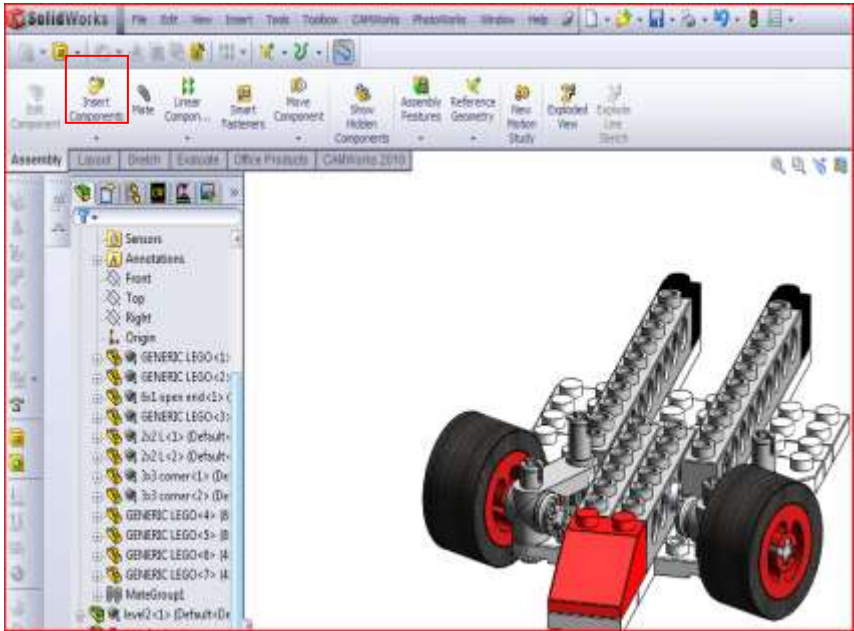
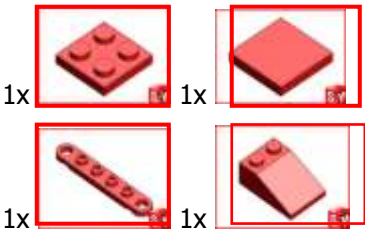




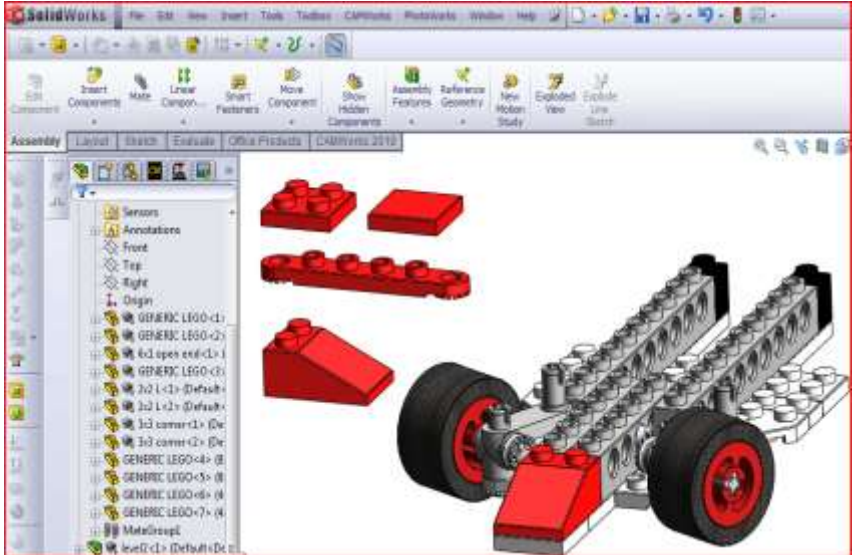
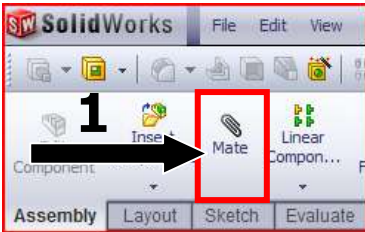

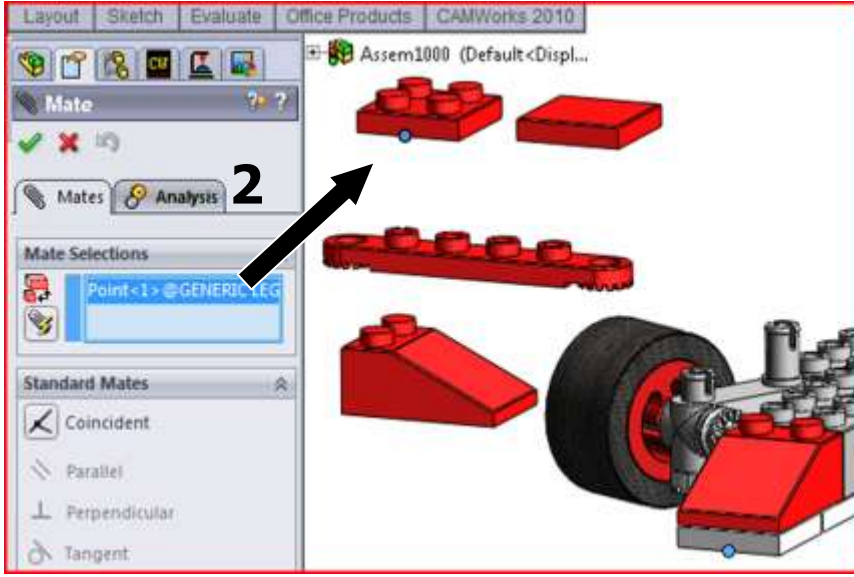



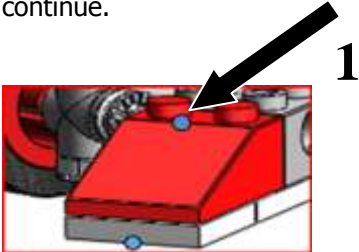
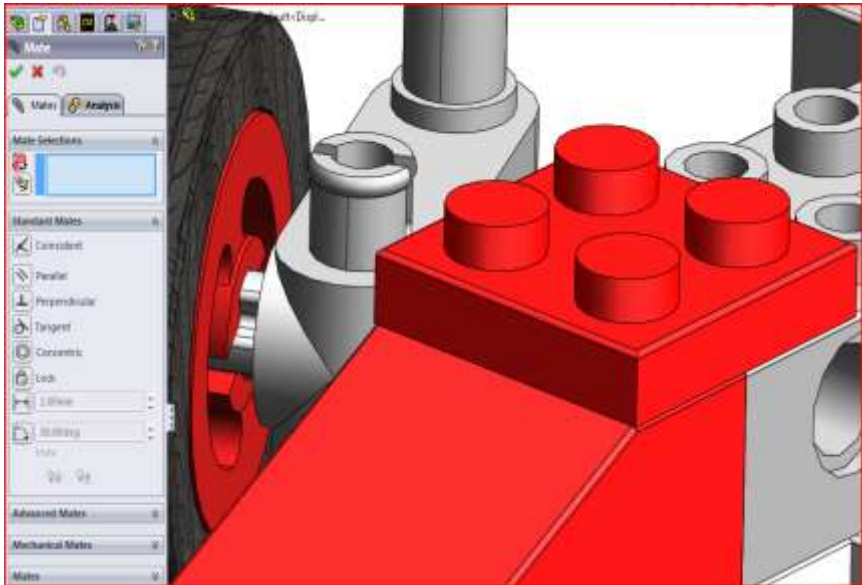


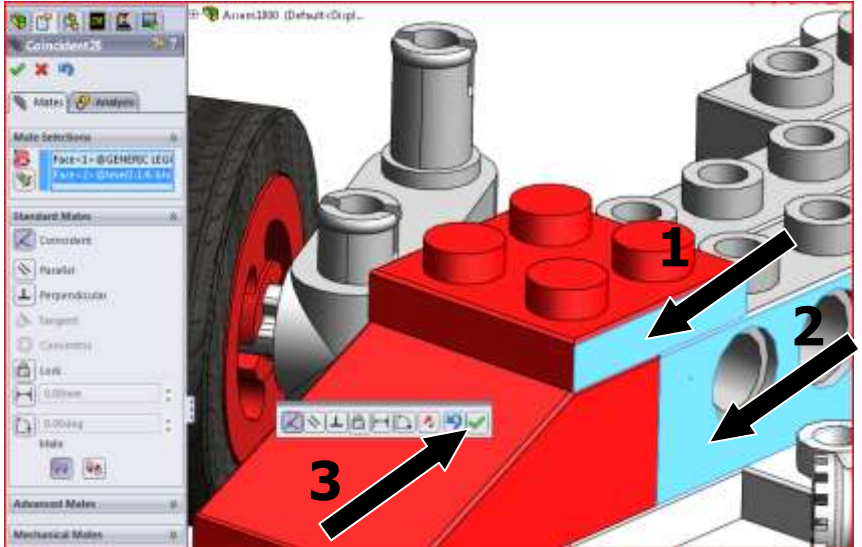
<p><b>30</b></p> <p>1. Click Mate again: </p> <p>We now return to the construction environment.</p>	
<p>1. Click the side of the hole, it will turn blue again. </p> 	
<p><b>32</b></p> <p>1. Click the side of the hole in the lower holder, it will turn blue again.</p> <p>You'll now see that both parts lie flush.</p> <p>2. Here's the proof! </p> <p>3. To confirm this, click: </p>	

<p><b>33</b></p> <p><b>1.</b> Click on the top of the lower part, it will turn blue again.</p> <p><b>2.</b> Press and hold the mouse's scroll wheel, and move the mouse.</p>  <p>Try to put everything upside down! "See the next step"</p>	
<p><b>34</b></p> <p><b>1.</b> Now click the bottom of the upper part. It will turn blue again and both parts will immediately connect together.</p>	
<p><b>35</b></p> <p><b>1.</b> Click OK: to confirm.</p>  <p>Let's save our data once again for the sake of safety!</p> <p>Click Save!</p> 	

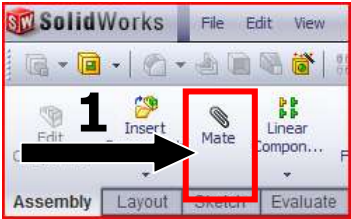

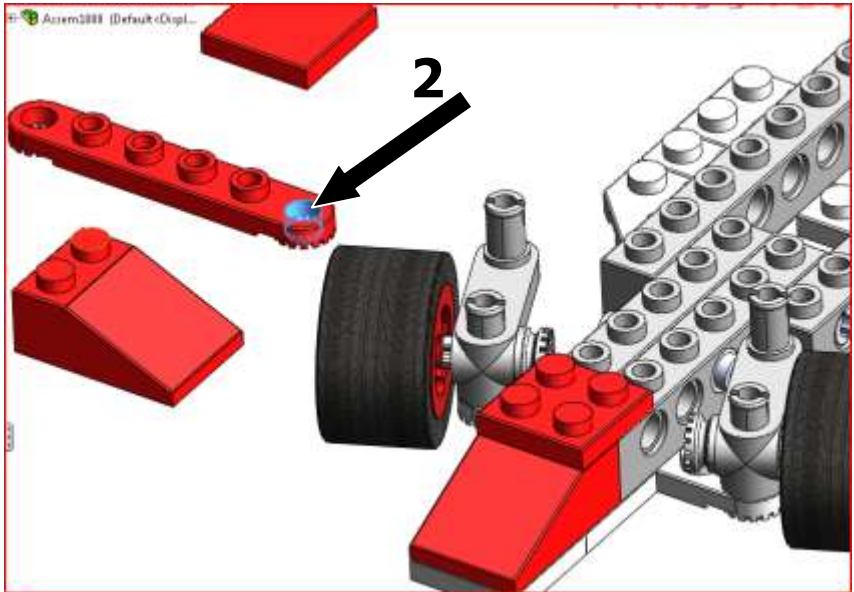

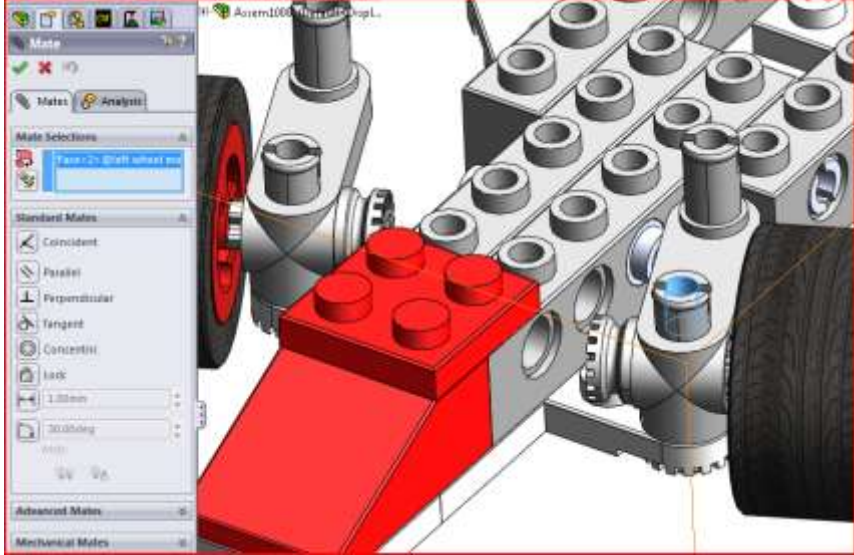


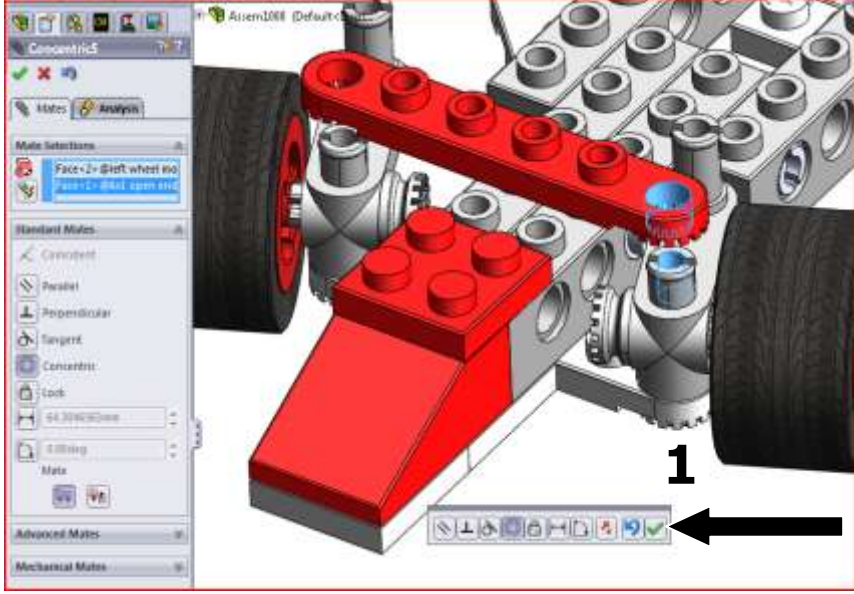
<p><b>36</b></p> <p><b>1. Click Mate:</b></p>  <p>We'll now put both holder arms in the same position.</p> <p><b>2. Click the left holder arm.</b></p> <p><b>3. Click the right holder arm.</b></p>	
<p><b>37</b></p> <p><b>1. Click:</b> </p>  <p>This command puts both holder arms in the same position.</p> <p><b>2. Click OK.</b></p>	
<p><b>38</b></p> <p><b>1. Click OK:</b> </p> <p>To close the Mate function.</p>	






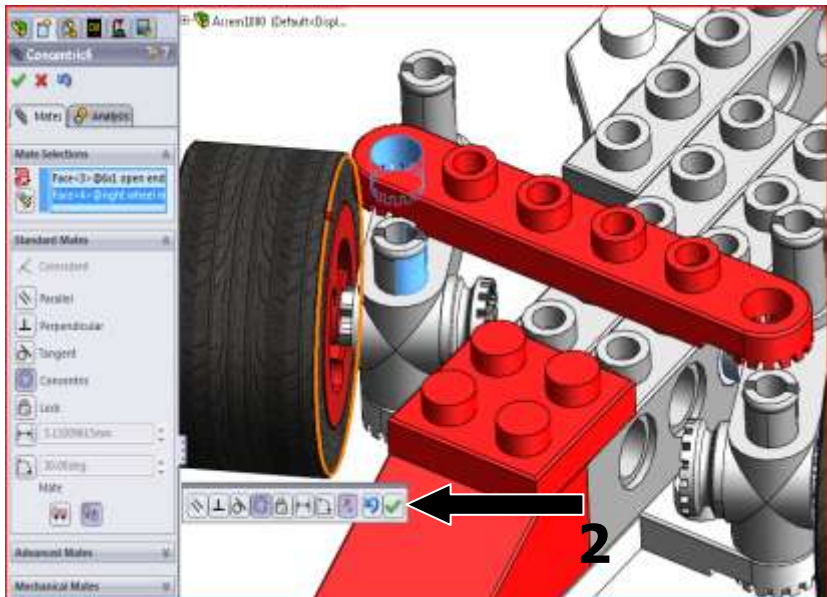

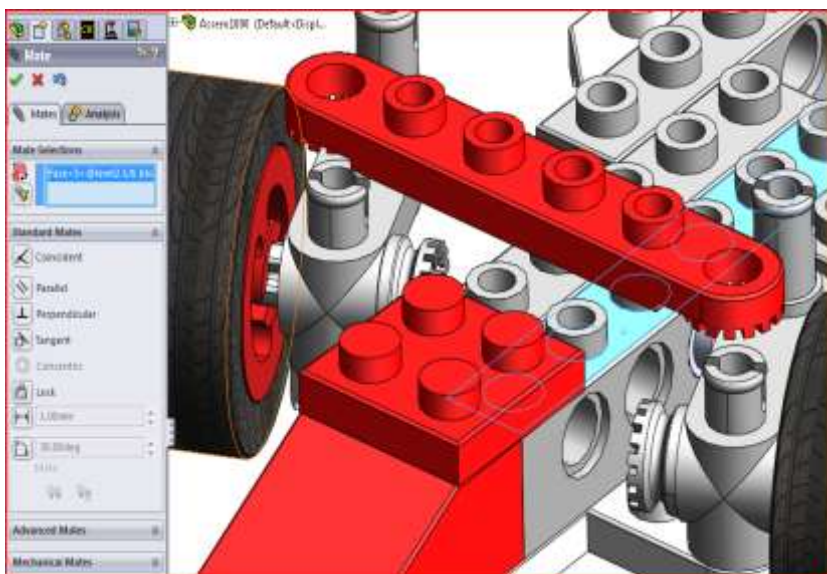



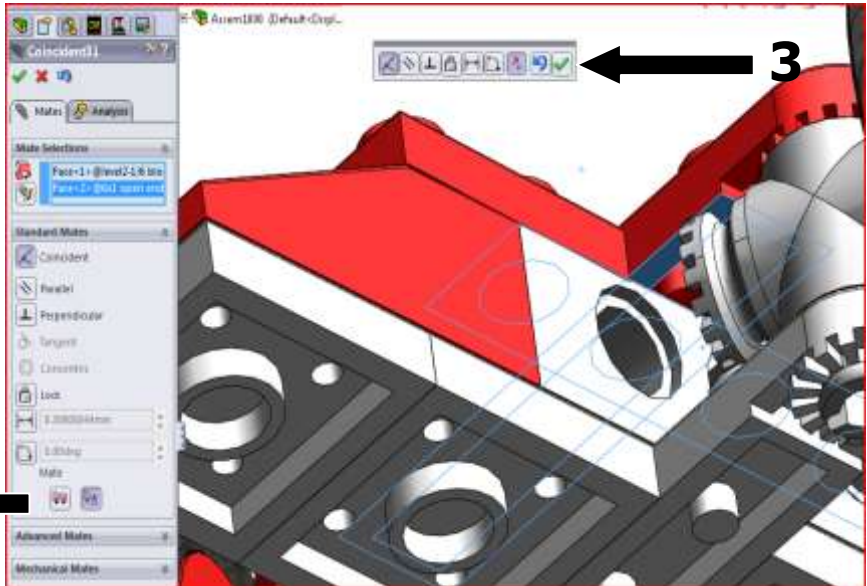
<p><b>39</b> We now return to the warehouse, for new parts.</p> <p><b>1. Click:</b> Insert Components.</p>  <p><b>2. Click: Browse...</b></p> 	
<p><b>40</b> We're looking for:</p>  <p>1x  1x   1x  1x </p>	
<p><b>41</b></p> <p><b>1. Click Mate:</b></p>  <p><b>2. Click in the middle of the image, and watch the dot you should see.</b></p> 	


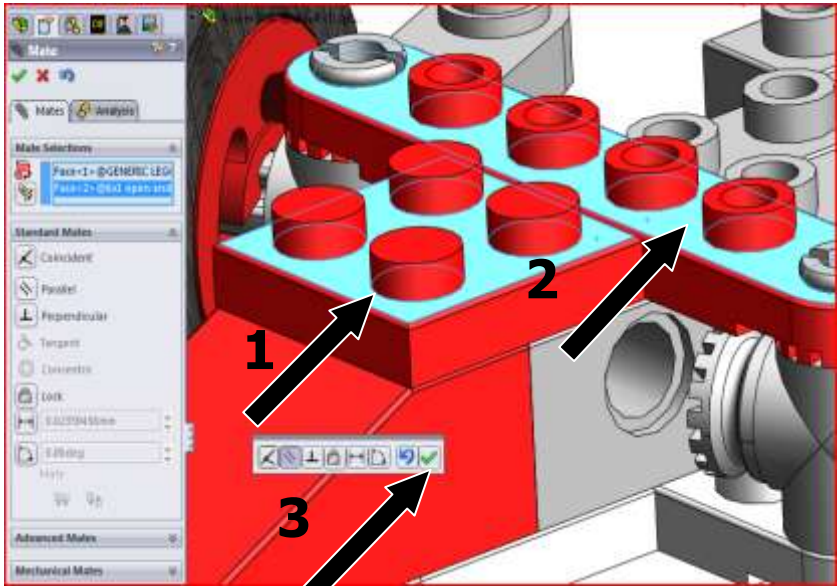

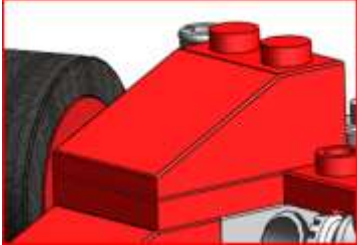
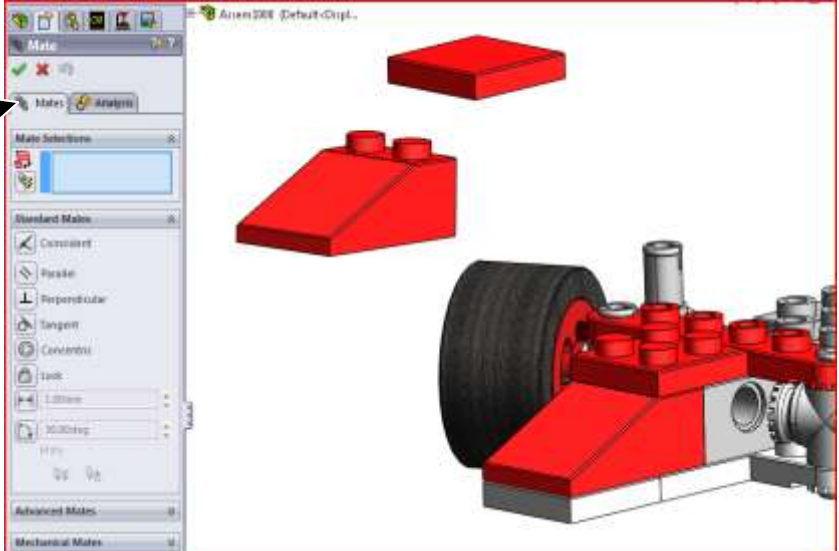



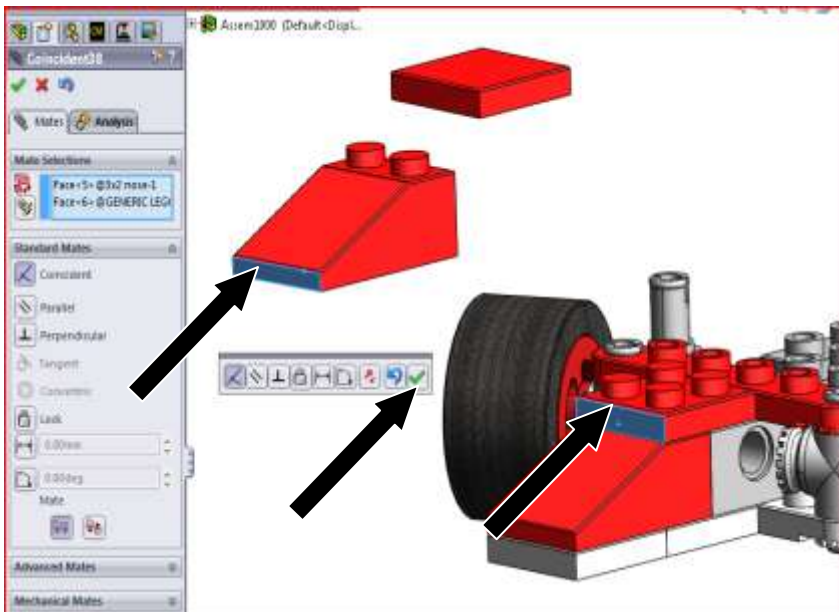
<p><b>42</b></p> <p><b>1.</b> Click on top of the middle of the nose.</p> <p> We're still working within the environment of the <b>mate</b> function, so we simply continue.</p> <p></p>	
<p><b>43</b></p> <p>You can see that both parts are now connected.</p> <p></p> <p>You can also see they're not straight.</p> <ol style="list-style-type: none"> <li><b>1.</b> Click the first side surface!</li> <li><b>2.</b> Click the second side surface!</li> <li><b>3.</b> Click OK: </li> </ol>	



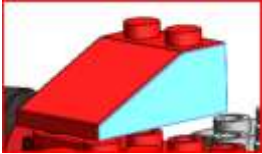


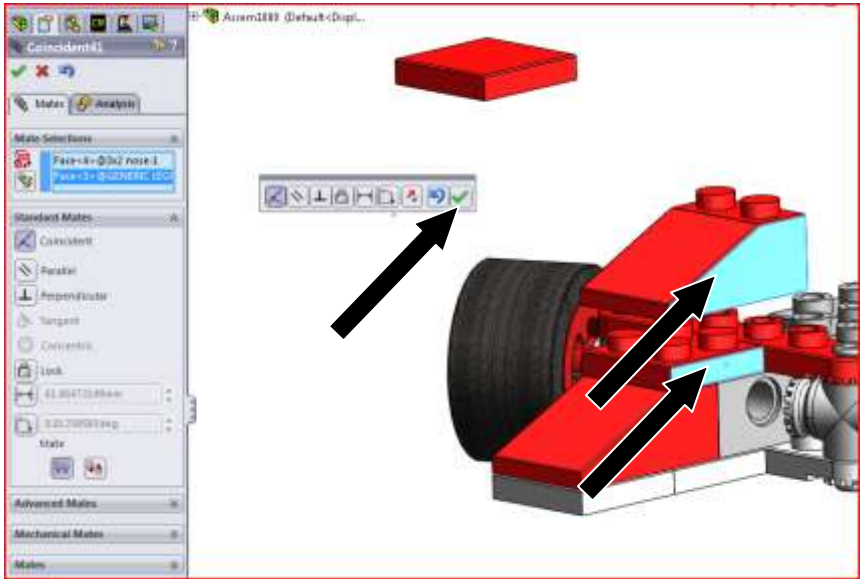

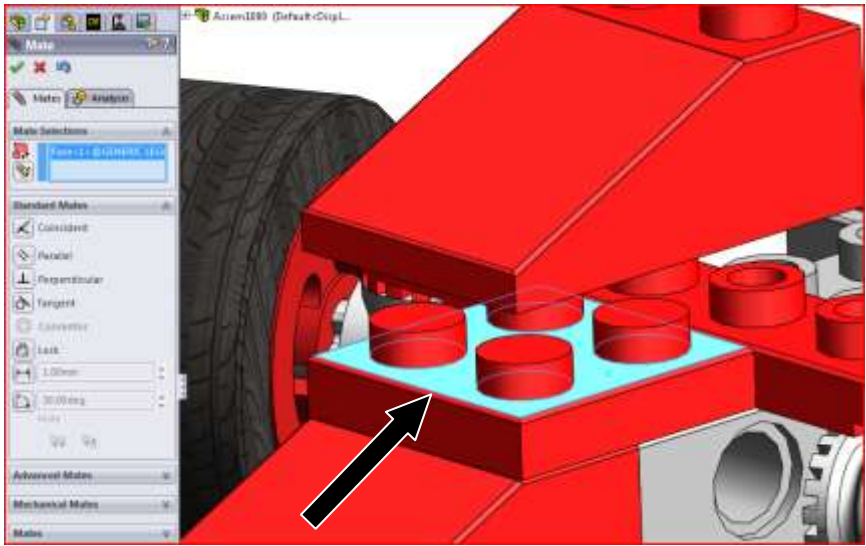



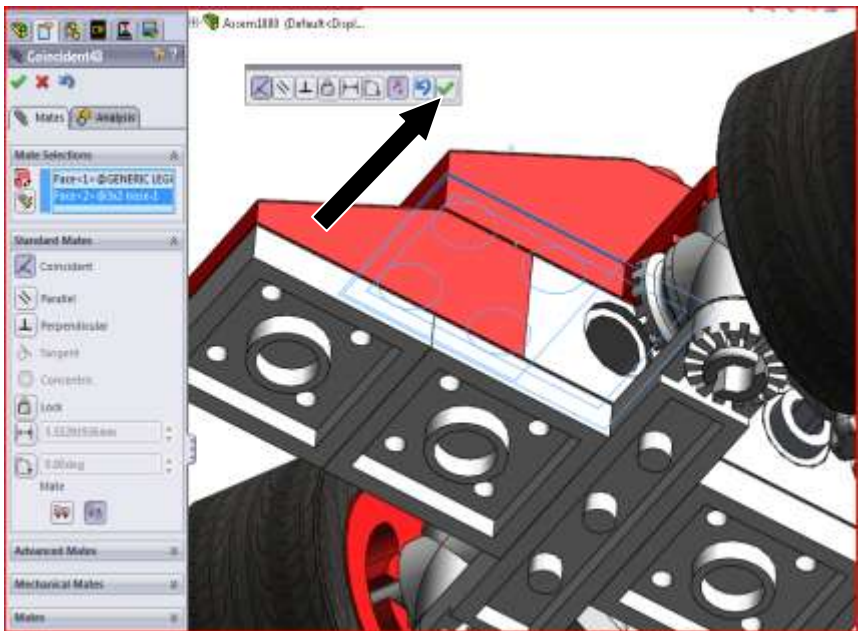
<p><b>44</b></p> <p><b>1. Click Mate:</b></p>  <p><b>2. Click the hole in the middle of the model</b></p> 	
<p><b>45</b></p> <p><b>1. Click the hole in the middle of the steering axle</b></p> 	
<p><b>46</b></p> <p>You'll now see that both holes are aligned.</p>  <p><b>1. Click OK.</b> </p>	



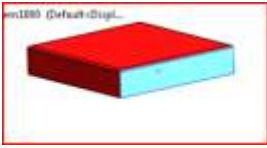
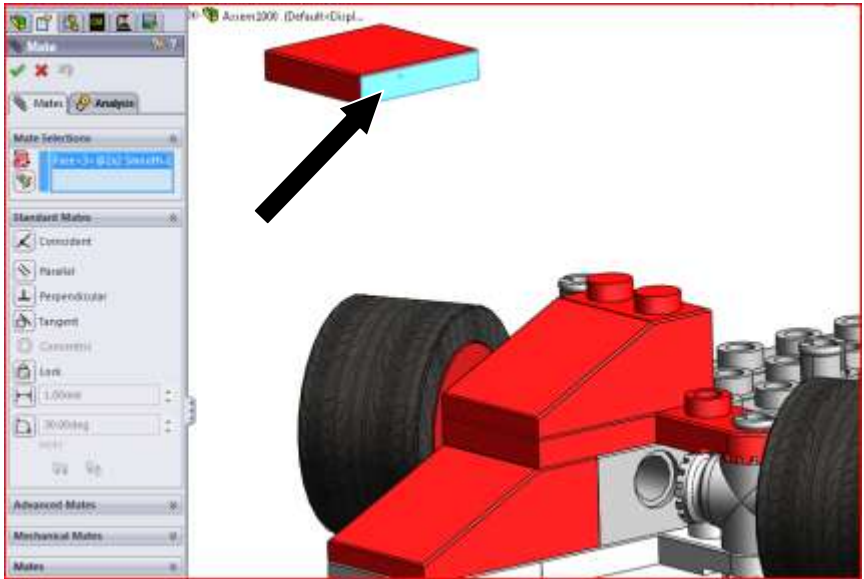


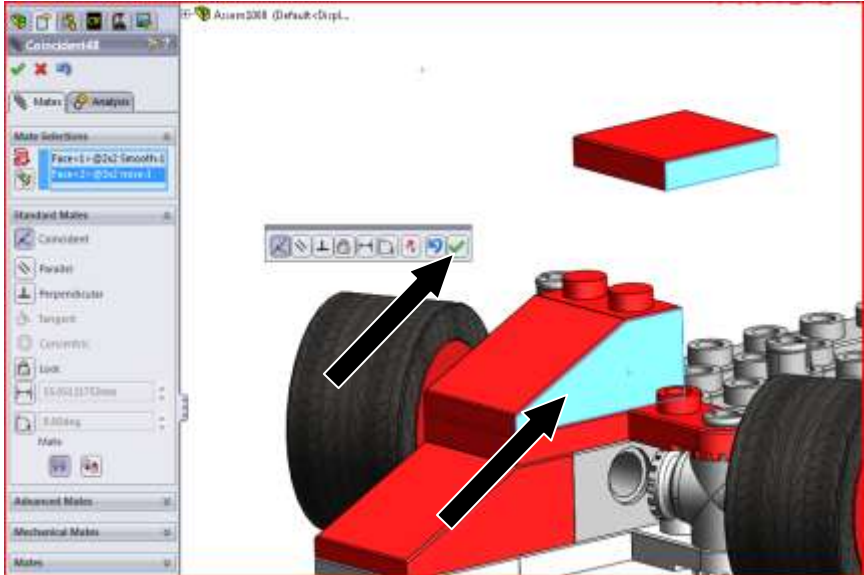

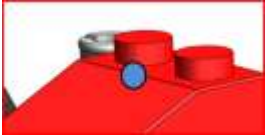
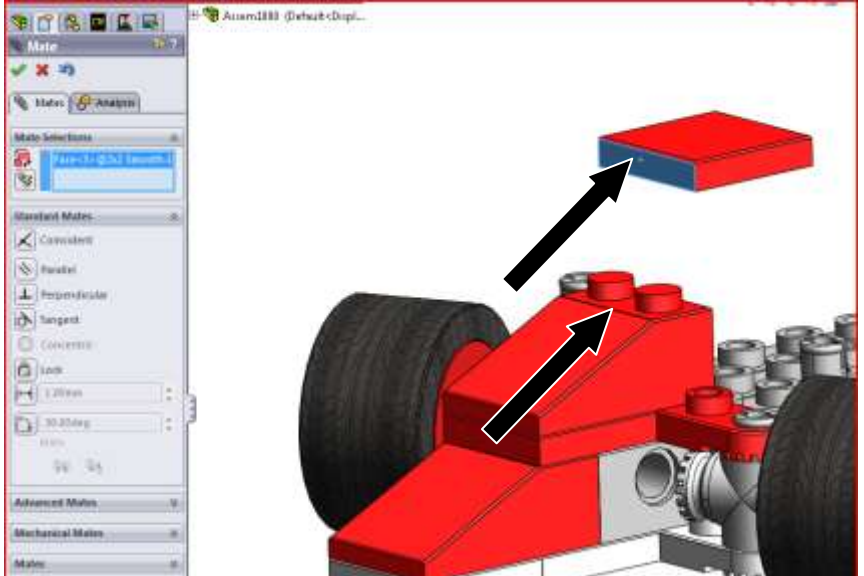
<p><b>47</b>  We're still in the <b>MATE</b> environment, so we'll simply continue.</p> <p>We now repeat the previous command for the left side.</p>  <p><b>2.</b> Click OK. </p>	
<p><b>48</b></p> <p>We'll fix the part to the chassis.</p> <p><b>1.</b> Click the Chassis, and please check: its color must change.</p> 	
<p><b>49</b></p> <p><b>1.</b> Press and hold the mouse's scroll wheel, and move the mouse.</p>  <p>Try to put everything upside down!</p> <p><b>2.</b> Click the bottom surface of the part.</p> <p><b>3.</b> Click OK. </p> 	


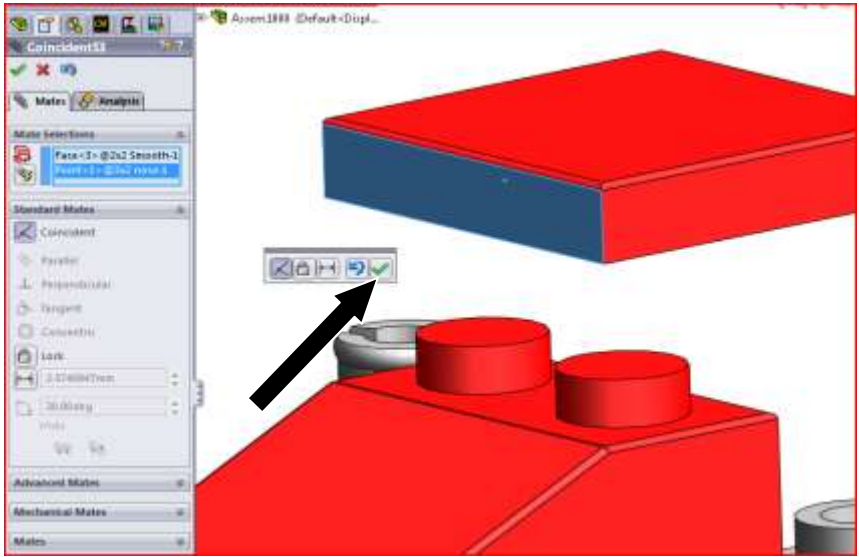
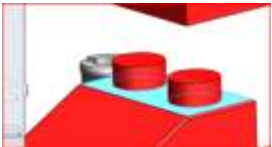
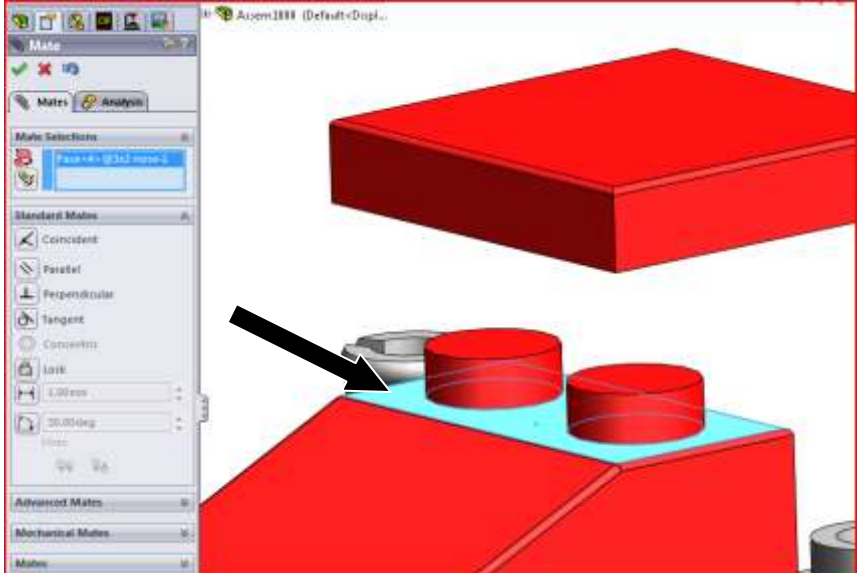


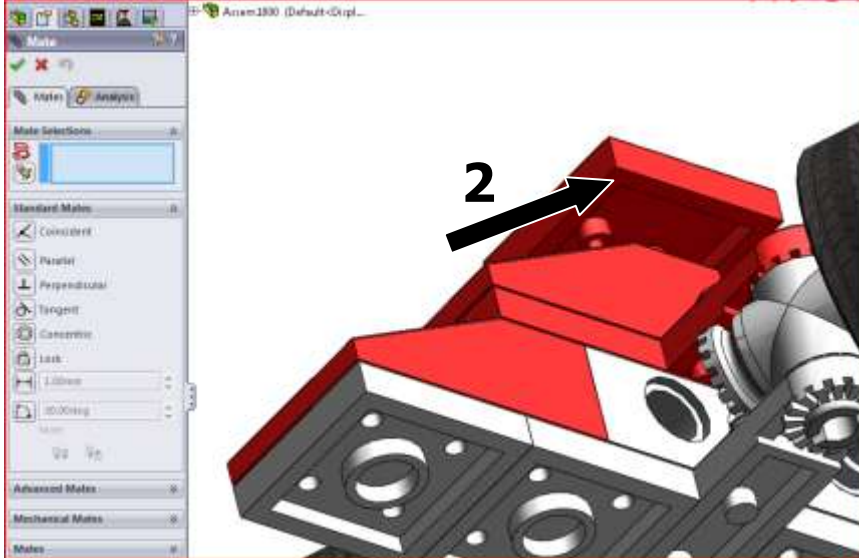
<p><b>50</b></p> <p>We'll now make flush both upper parts.</p> <ol style="list-style-type: none"> <li>1. Click: The upper side of the image.</li> <li>2. Click the upper side of the control stick.</li> <li>3. Click OK: </li> </ol>	
<p><b>51</b></p> <p> As we're still in the <b>MATE</b> environment, we can simply continue.</p> <p>We'll now continue to build the nose.</p> 	
<p><b>52</b></p> <p>1. Click:</p>  <p>2. Click:</p>  <p>3. Click OK: </p>	






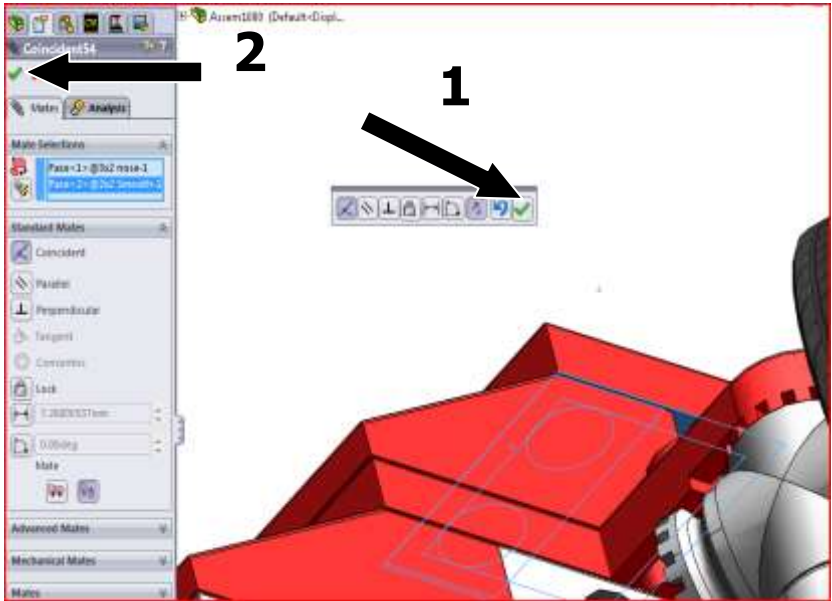
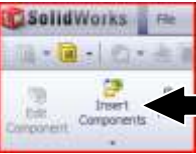
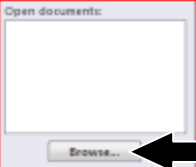
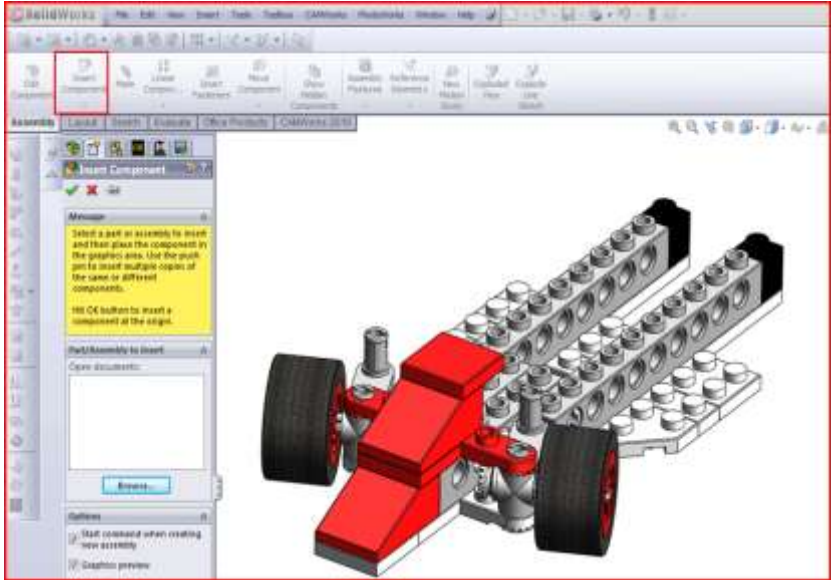
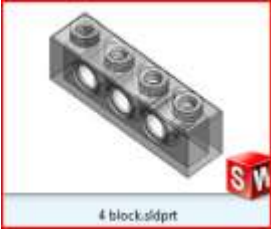

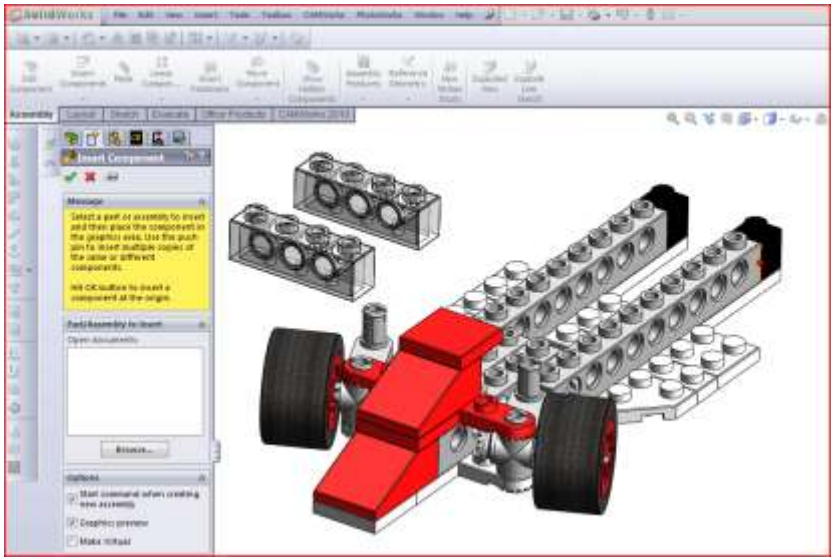


<p><b>53</b></p> <p>1. Click:</p>  <p>2. Click:</p>  <p>3. Click OK: </p>	
<p><b>54</b></p> <p>1. Click:</p> 	
<p><b>55</b></p> <p>1. Press and hold the mouse's scroll wheel and move the mouse.</p>  <p>Try to put everything upside down!</p> <p>2. Click the bottom surface of the part.</p>  <p>3. Click OK: </p>	



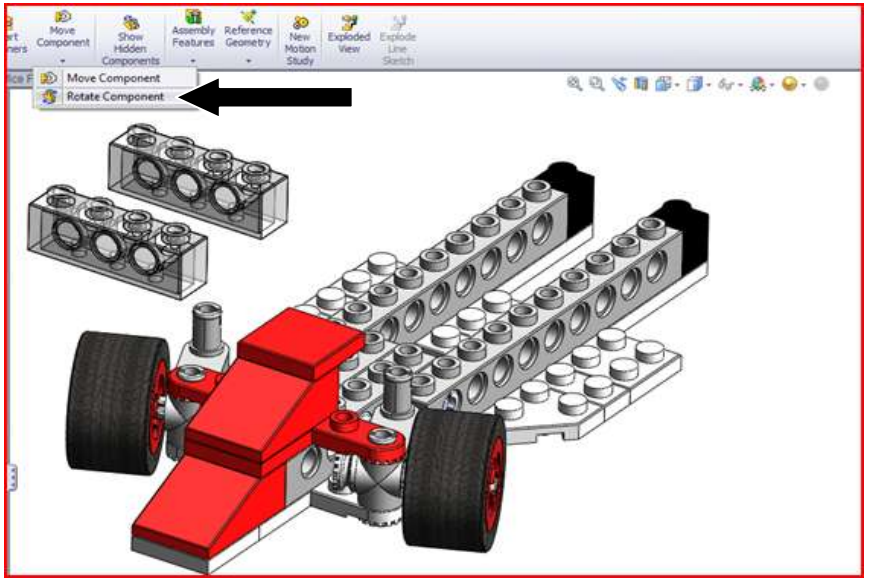


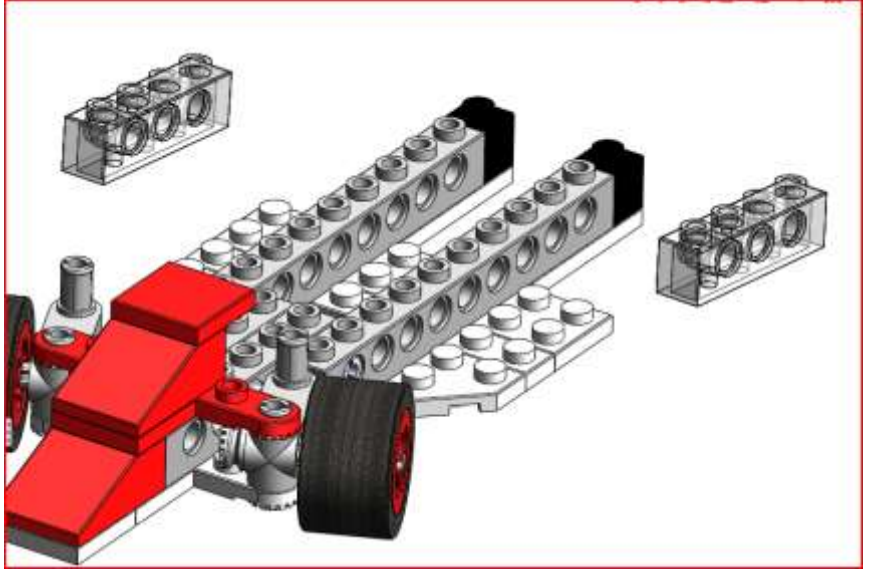




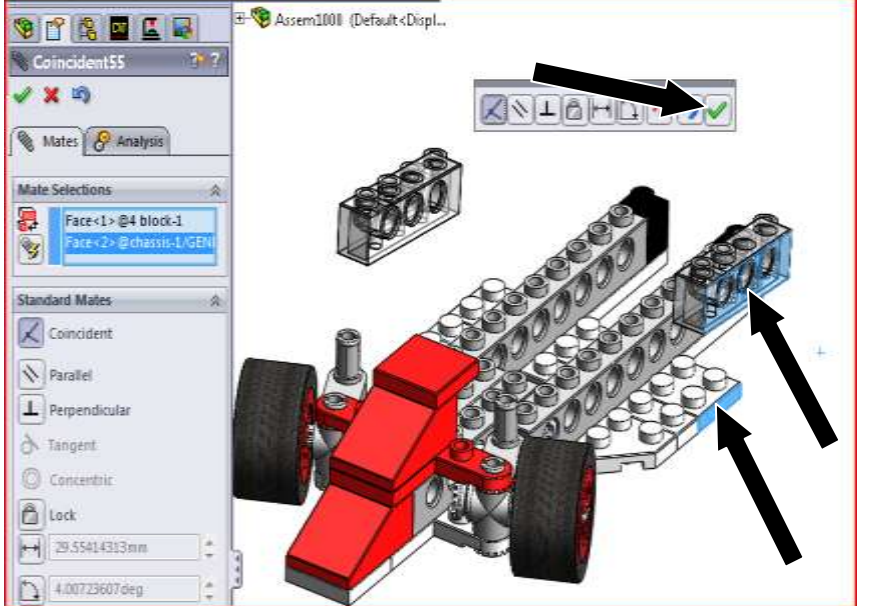





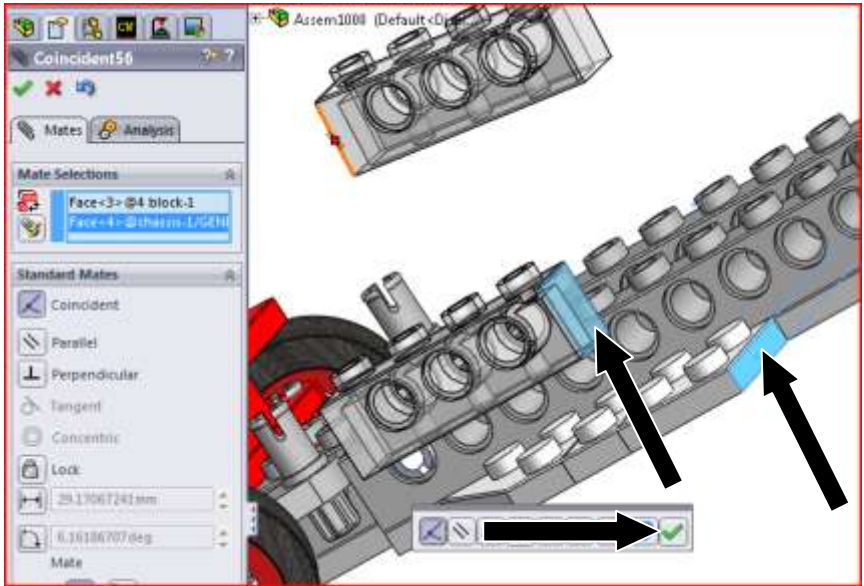

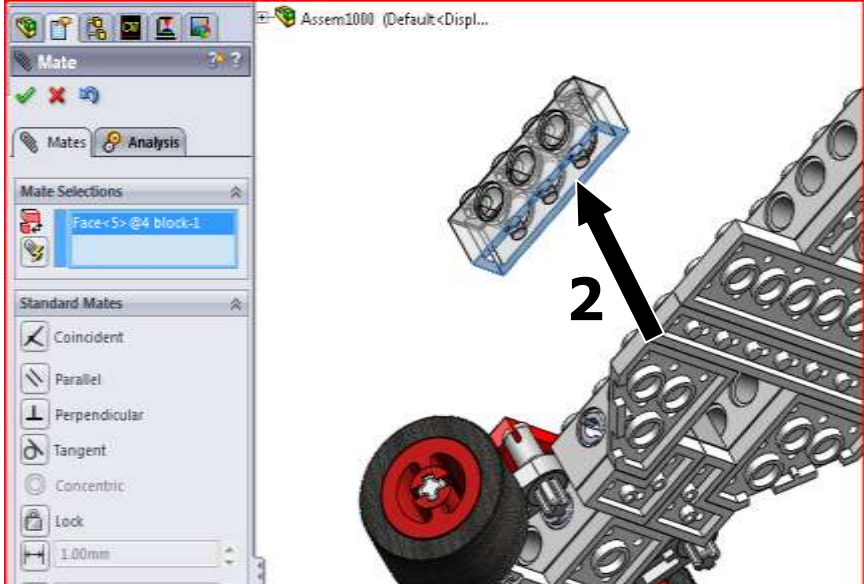


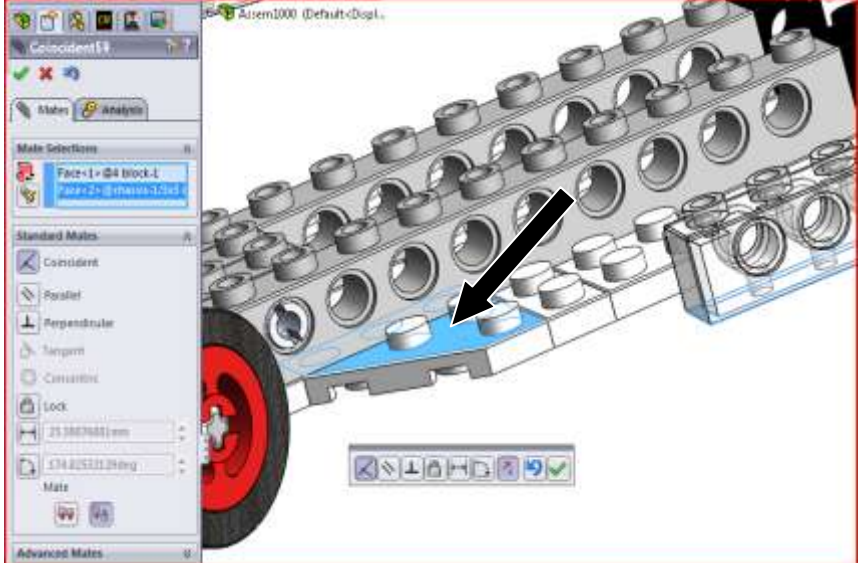
<p><b>56</b></p> <p>1. Click:</p> 	
<p><b>57</b></p> <p>1. Click:</p>  <p>2. Click OK: </p>	
<p><b>58</b></p> <p>1. Click:</p>  <p>2. Click: Middle point Upper edge</p> 	

<p><b>59</b></p> <p>1. Click OK: </p>	
<p><b>60</b></p> <p>1. Click:</p> 	
<p><b>61</b></p> <p>1. Press and hold the mouse's scroll wheel and move the mouse. </p> <p>Try to put everything upside down!</p> <p>2. Click the bottom surface of the part.</p> 	





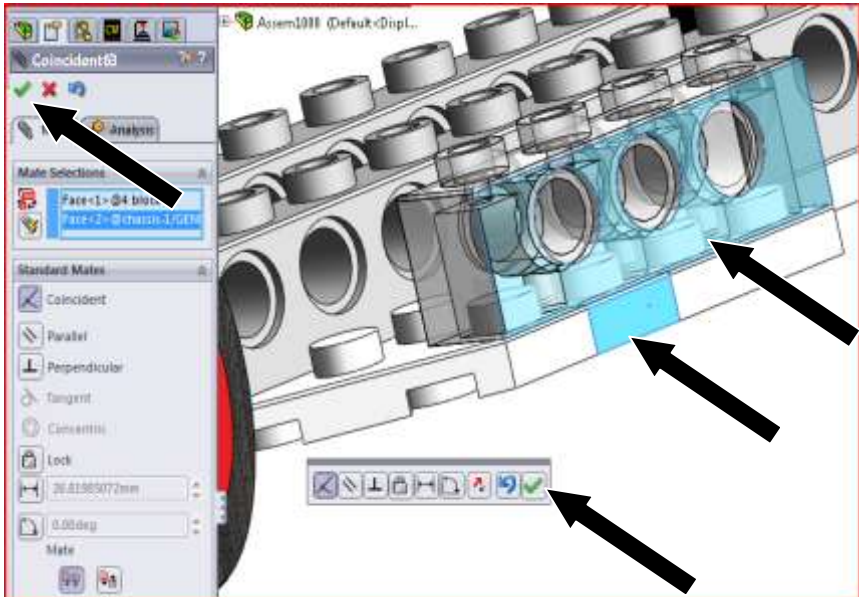
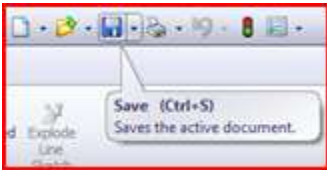
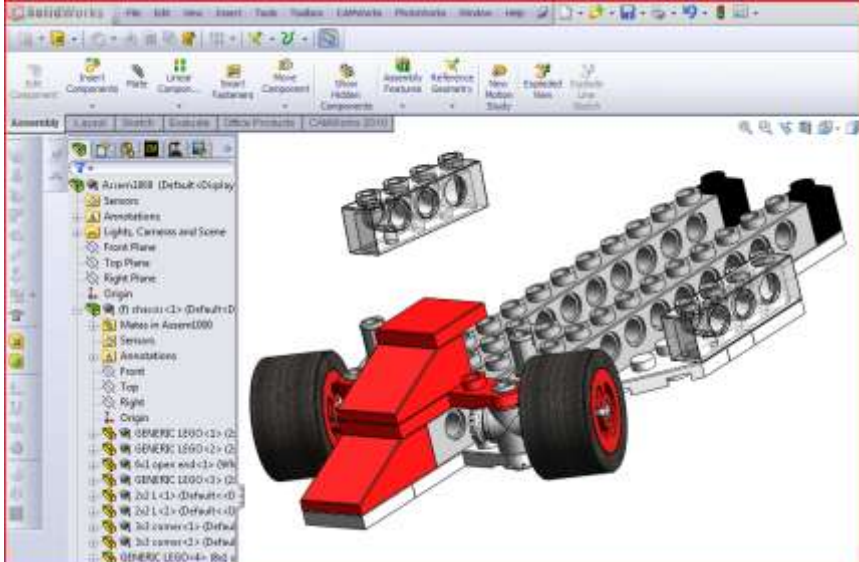

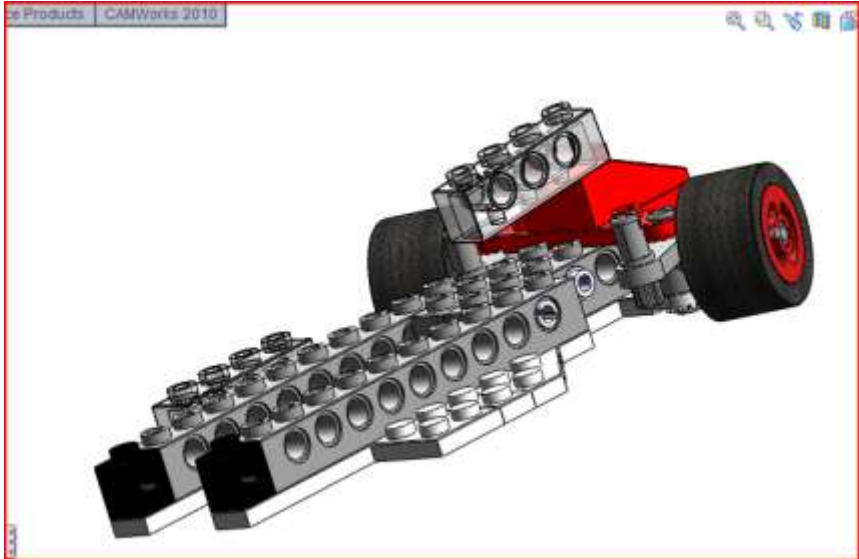
<p><b>62</b></p> <p>1. Click OK: </p> <p>2. Close the <b>MATE</b> function.</p> <p>Click OK:   </p> <p>Let's save our data once again for the sake of safety!</p> <p>Click Save.</p> 	
<p><b>63</b></p> <p>We now return to the warehouse, for new parts.</p> <p>1. Click: Insert Components.</p>  <p>2. Click: Browse...</p> 	
<p><b>64</b></p> <p>We're looking for:</p>  <p>2x </p> <p>Double-click it:</p> <p>Do this twice:</p> <p>And position both parts as illustrated opposite!</p>	






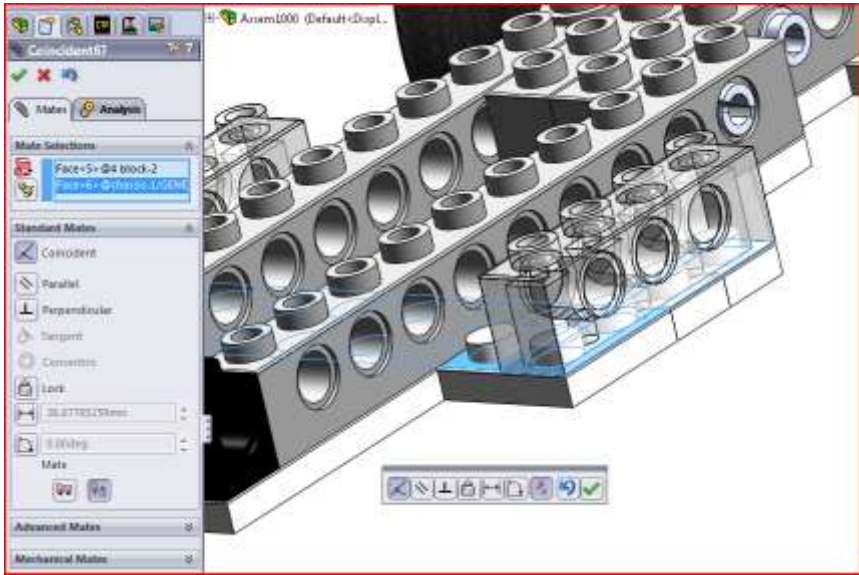
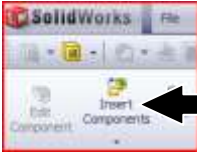
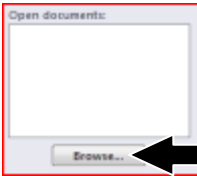
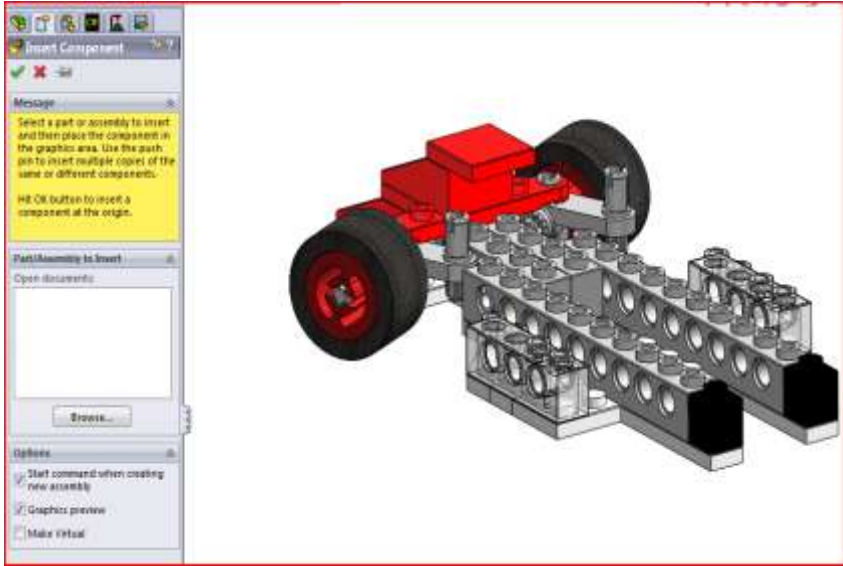
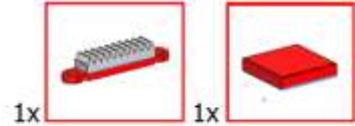
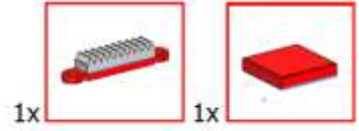

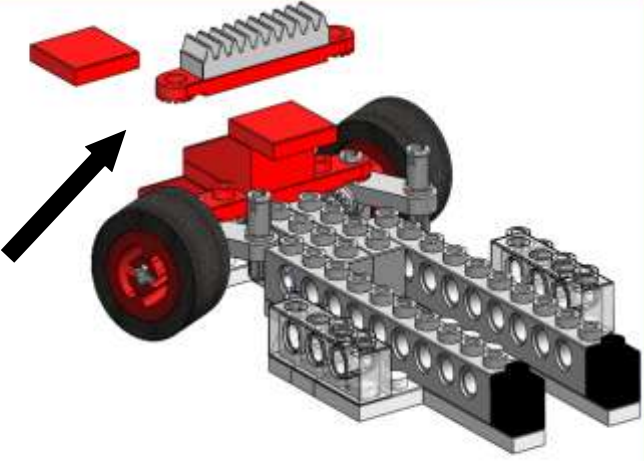
<p><b>65</b></p> <p>If all went well, your screen now displays the frame and both new parts, as illustrated opposite.</p> <p>But we also see both parts are positioned wrongly. We'll rotate both parts, as we did before.</p> <ol style="list-style-type: none"> <li>1. Click:  Rotate Component</li> <li>2. Click the head and hold the left mouse button.</li> </ol>  <p>You can now rotate the part.</p>	
<p><b>66</b></p> <p>We'll now shift the parts!</p> <ol style="list-style-type: none"> <li>1. Click: Move Component.</li> </ol>  <ol style="list-style-type: none"> <li>2. Click the part and press and hold the left mouse button.</li> </ol>  <p>You can now shift the part.</p>	
<p><b>67</b></p> <p>We're going to build again!</p> <ol style="list-style-type: none"> <li>1. Click Mate.</li> </ol>  <ol style="list-style-type: none"> <li>2. Click: </li> <li>3. Click: </li> <li>4. Click: </li> </ol>	




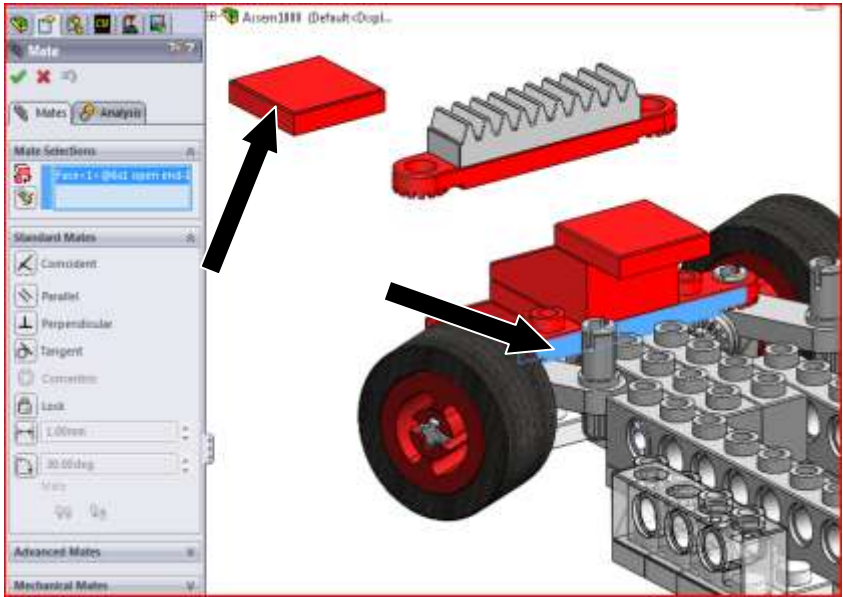

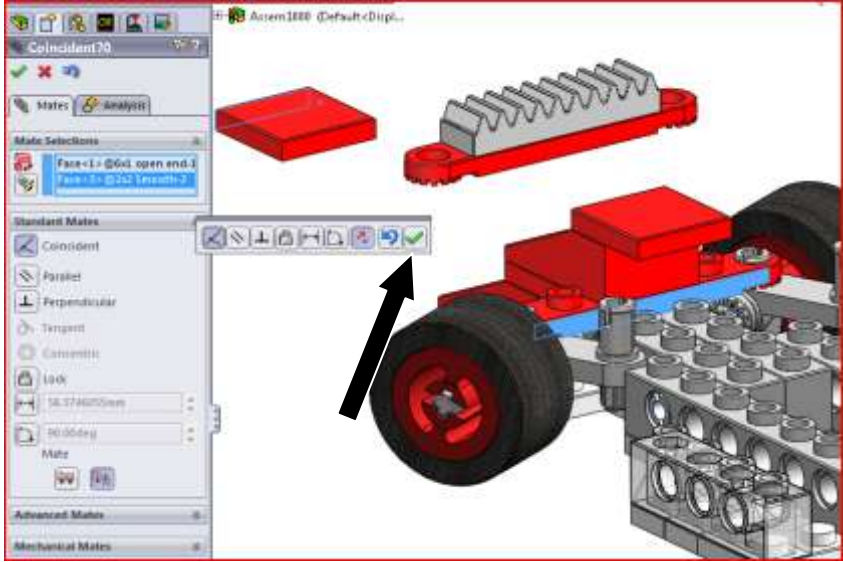



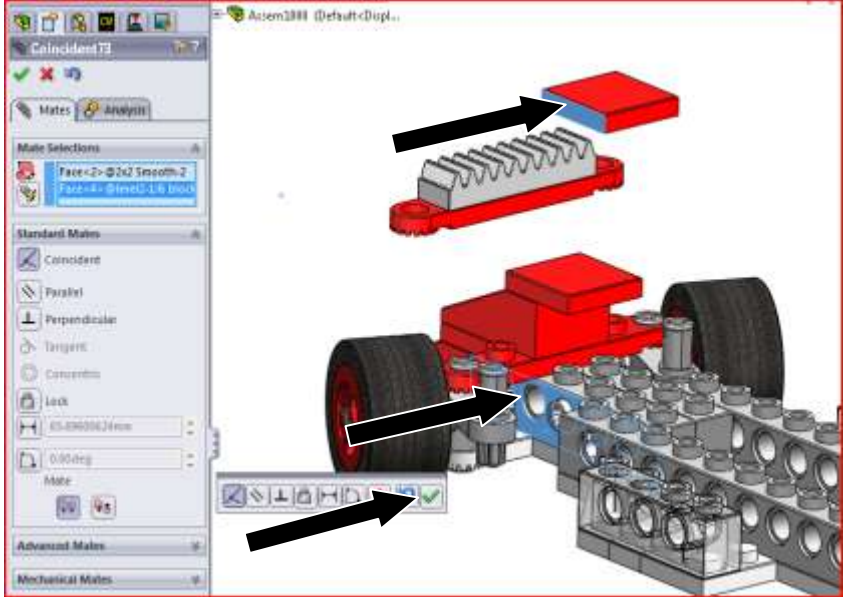
<p><b>68</b></p> <p>We're still in the <b>MATE</b> environment, so we'll simply continue!</p> <p>1. Click: </p> <p>2. Click: </p> <p>3. Click: </p>	
<p><b>69</b></p> <p>1. Press and hold the mouse's scroll wheel, and move the mouse.</p> <p>Try to put everything upside down!</p> <p>2. Click the bottom surface of the part.</p> <p></p>	
<p><b>70</b></p> <p>1. Press and hold the mouse's scroll wheel, and move the mouse.</p> <p>Make sure everything is positioned normally again!</p> <p>2. Click the upper surface of the part.</p> <p></p> <p>3. Click: </p>	




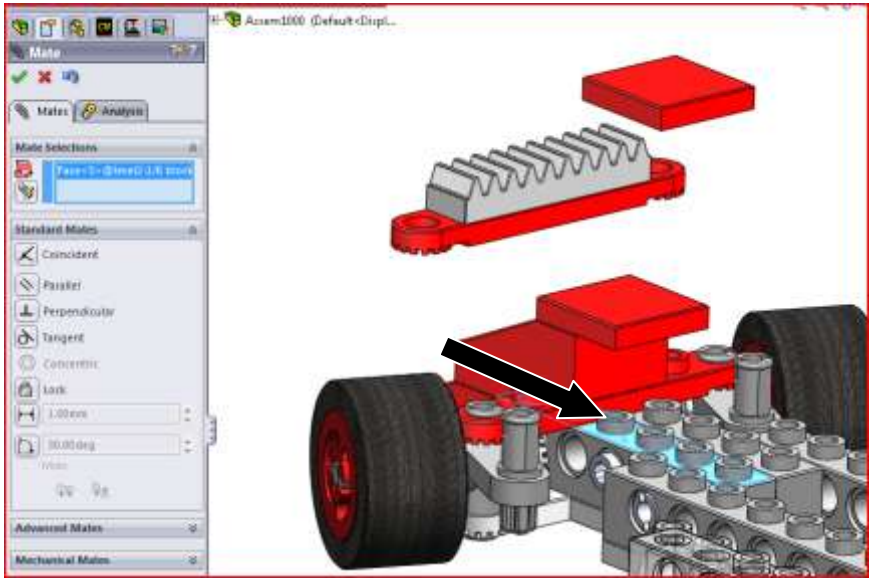


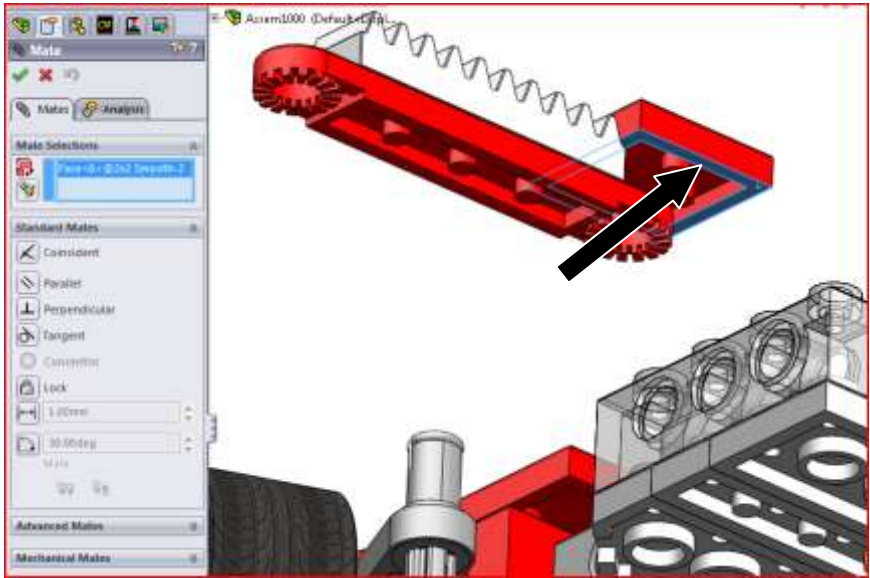

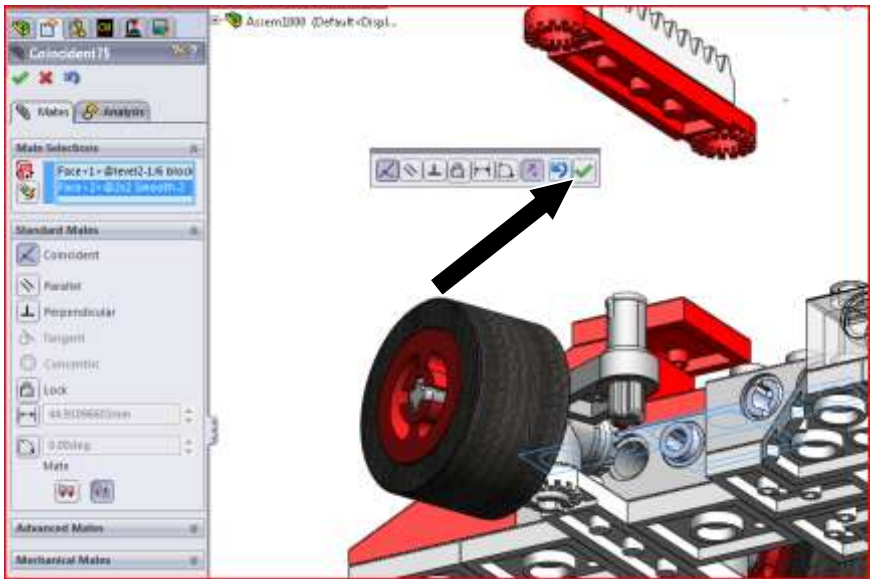
<p><b>71</b></p> <p>1. Click: </p> <p>2. Click: </p> <p>3. Click: </p> <p>4. Click OK: </p> <p>The <b>Mate</b> function is now closed</p>	
<p><b>72</b></p> <p>Let's save our data once again for the sake of safety!</p> <p>Click Save!</p> 	
<p><b>73</b></p>  <p>Press the scroll wheel and rotate the model!!</p> <p>See the example opposite!!</p>	




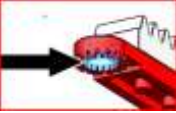


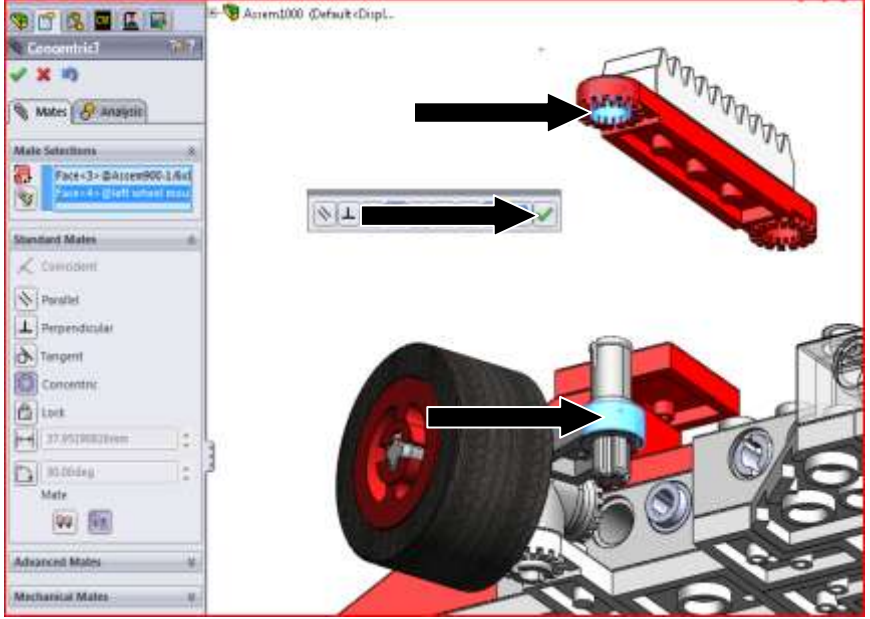



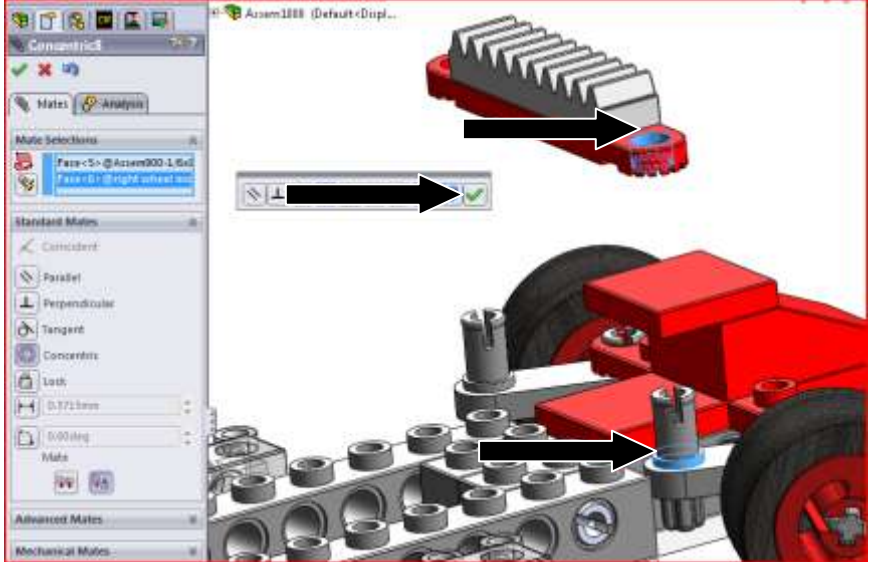



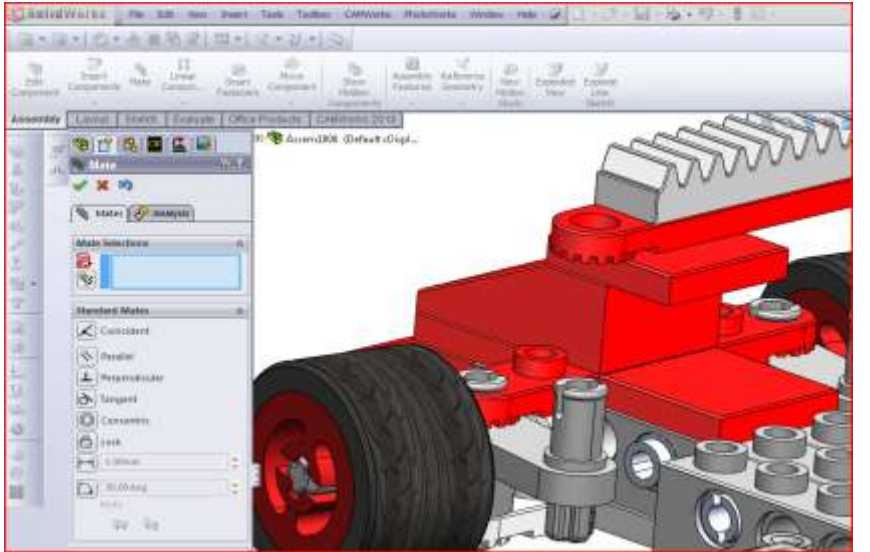
<p><b>74</b></p>	<p><b>1. Click Mate:</b></p>  <p> Continue using what you just learned in the previous steps.</p> <p><b>2. Click the right places!</b></p> <p><b>3. Click OK on time:</b> </p> <p><b>4. Try to make everything as illustrated opposite, then close MATE.</b></p>	
<p><b>75</b></p>	<p>We now return to the warehouse, for new parts.</p> <p><b>1. Click: Insert Components.</b></p>  <p><b>2. Click: Browse...</b></p> 	 
<p><b>76</b></p>	<p>We're looking for:</p>  <p>Position the parts as illustrated opposite!</p>	 

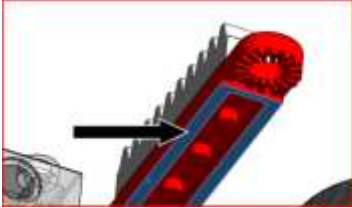
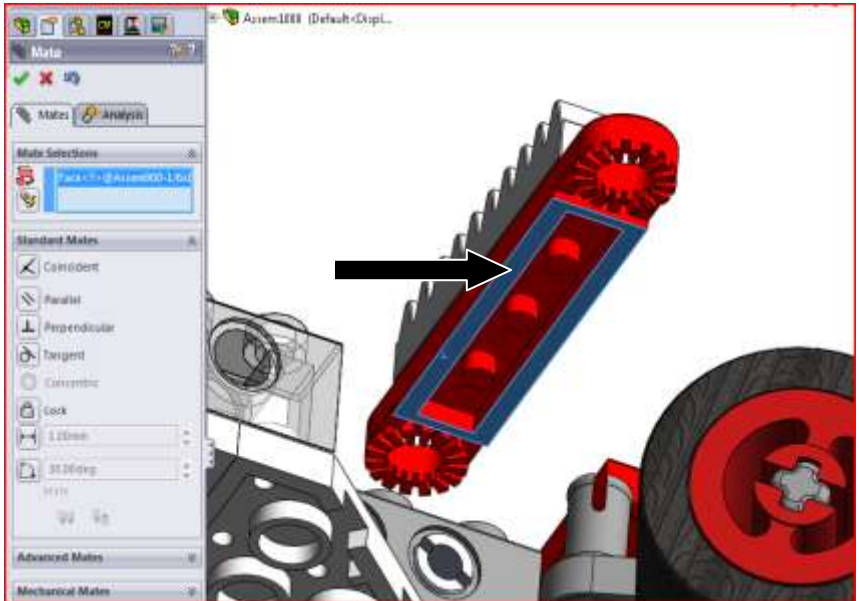

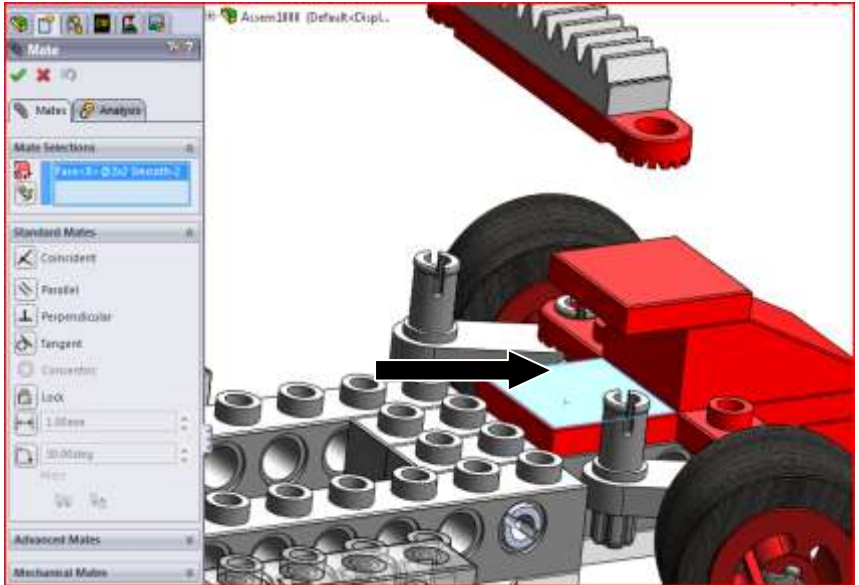


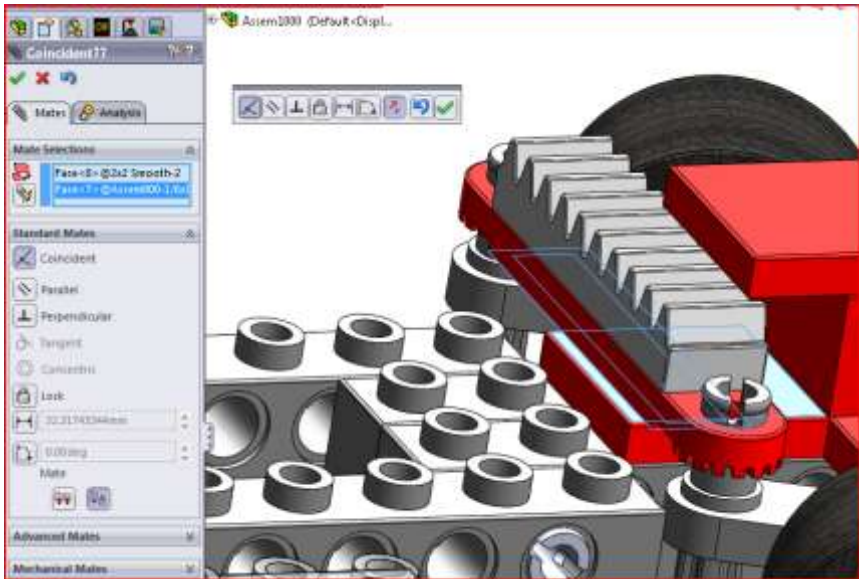
<p><b>77</b></p> <p><b>1. Click: Mate.</b></p>  <p><b>2. Click:</b></p>  <p><b>3. Click:</b></p> 	
<p><b>78</b></p> <p><b>1. Click:</b></p> 	
<p><b>79</b></p> <p><b>1. Click:</b></p>  <p><b>2. Click:</b></p>  <p><b>3. Click:</b></p> 	




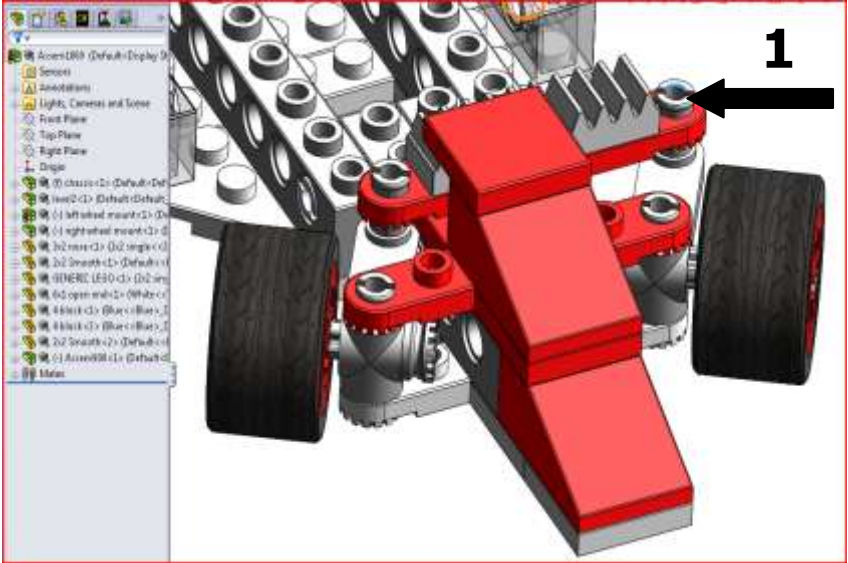
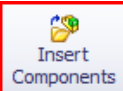
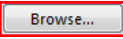



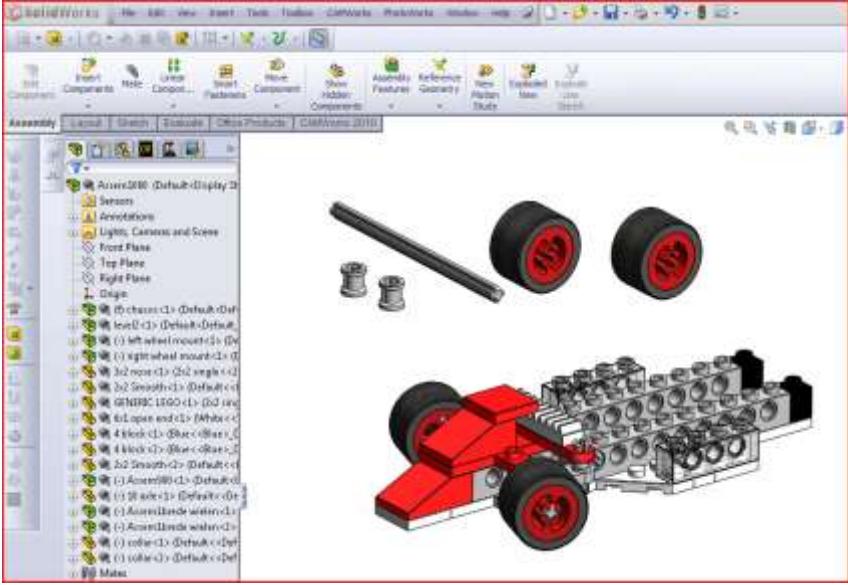



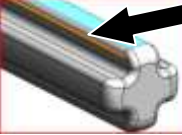
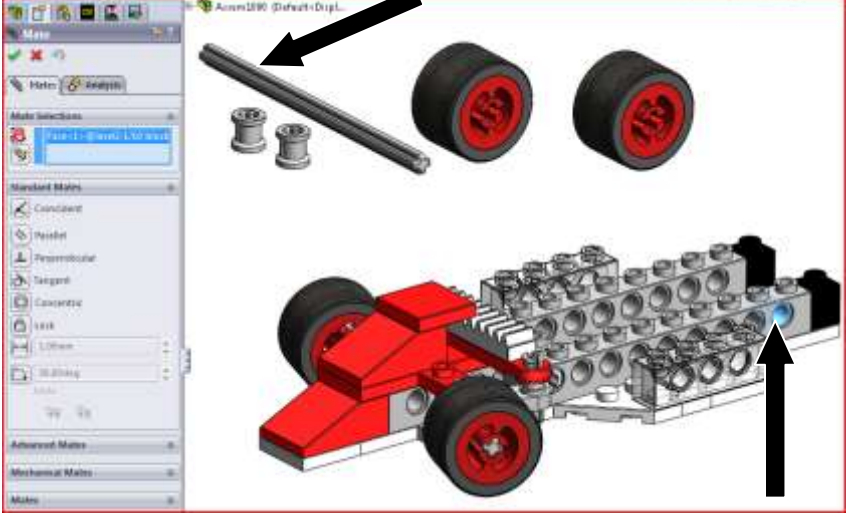
<p><b>80</b></p> <p>1. Click:</p> 	
<p><b>81</b></p> <p>1. Press and hold the mouse's scroll wheel, and move the mouse.</p>  <p>Try to put everything upside down!</p> <p>2. Click the bottom surface of the part.</p> 	
<p><b>82</b></p> <p>1. Click OK: </p>	






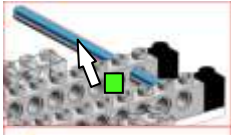
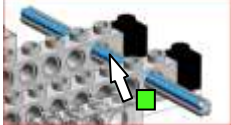
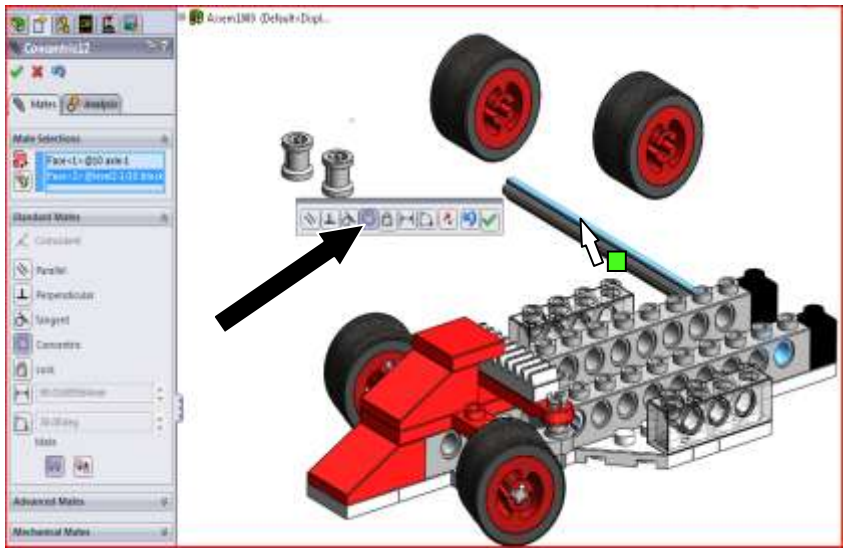

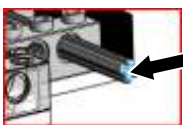

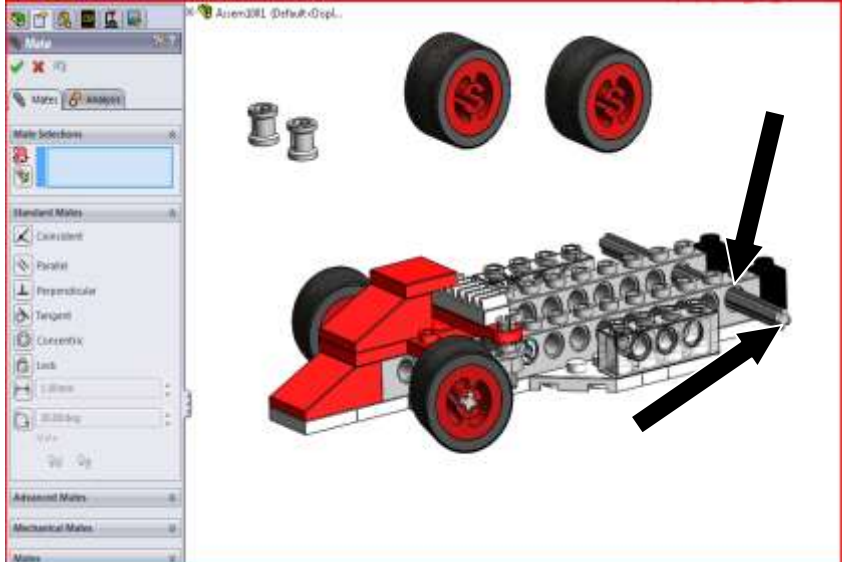

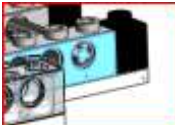


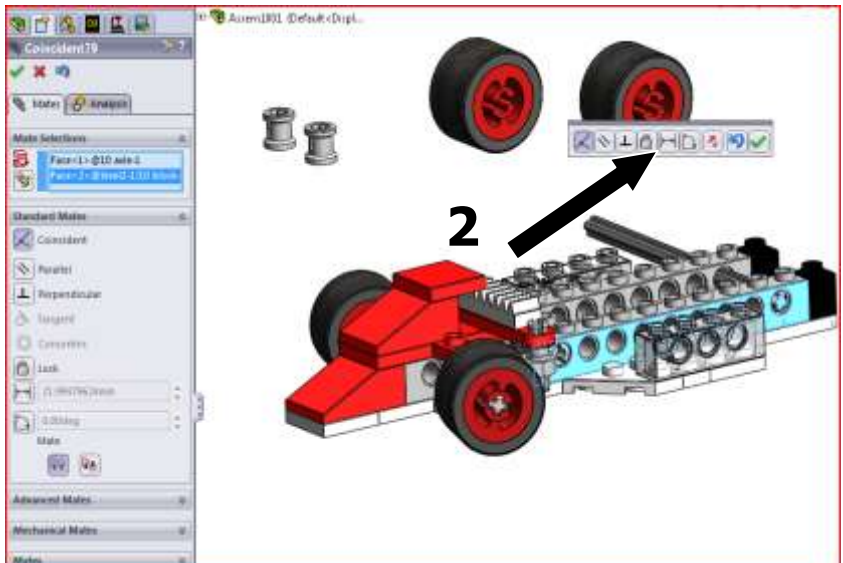
<p><b>83</b></p>  <p>We're still in the <b>MATE</b> environment, so we'll simply continue!</p> <p>1. Click: </p> <p>2. Click: </p> <p>3. Click OK: </p>	
<p><b>84</b></p> <p>1. Click: </p> <p>2. Click: </p> <p>3. Click OK: </p> <p>Half of the part now has been aligned!</p>	
<p><b>85</b></p> <p>Rotate the model and repeat on the other side.</p> <p>Use the <b>Mate function</b> you've learned to use in the previous step (84)!</p>  <p><b>To better see everything!</b></p> <p><b>Use the scroll wheel.</b></p>  <p>Zoom in  Zoom out</p>	





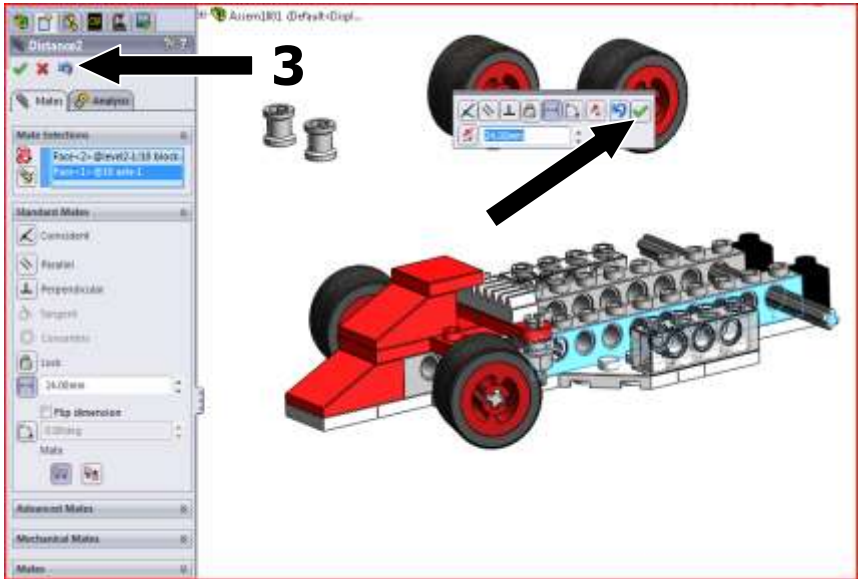



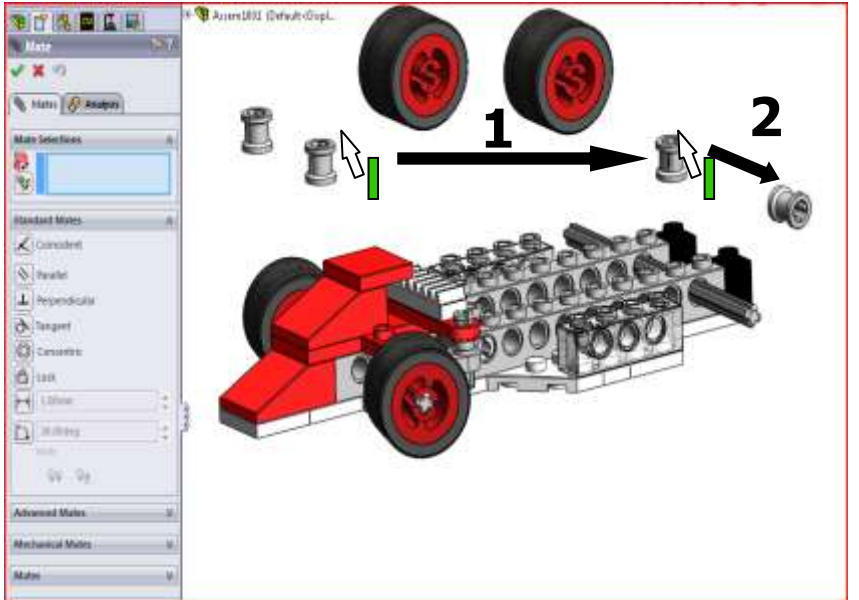


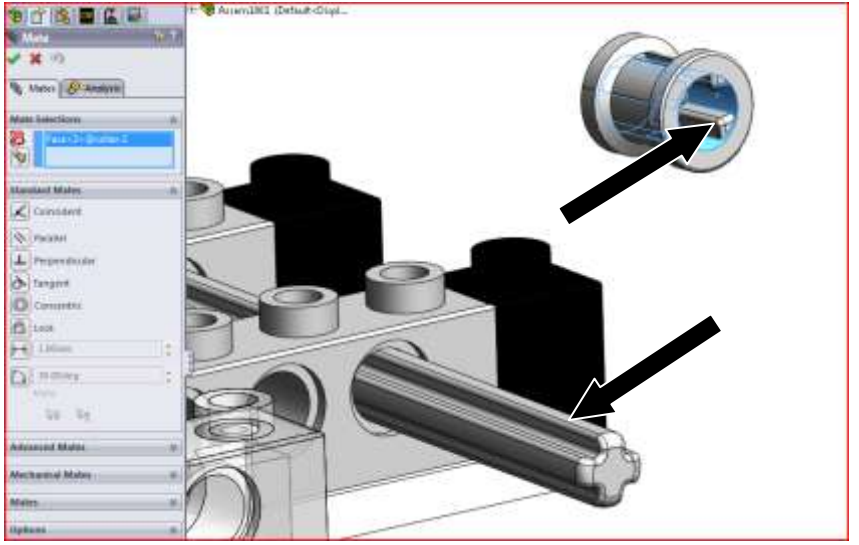
<p><b>86</b></p> <p><b>1.</b> Press and hold the mouse's scroll wheel, and move the mouse.</p> <p>Try to put everything upside down!</p> <p><b>2.</b> Click the bottom surface of the part.</p> 	
<p><b>87</b></p> <p><b>1.</b> Press and hold the mouse's scroll wheel, and move the mouse.</p> <p>Make sure everything is positioned normally again!</p> <p><b>2.</b> Click the upper surface of the part.</p> 	
<p><b>87</b></p> <p><b>1.</b> You now see the part is positioned correctly.</p> <p><b>2.</b> Click OK: </p> <p>Let's save our data once again for the sake of safety!</p> <p>Click Save:</p> 	





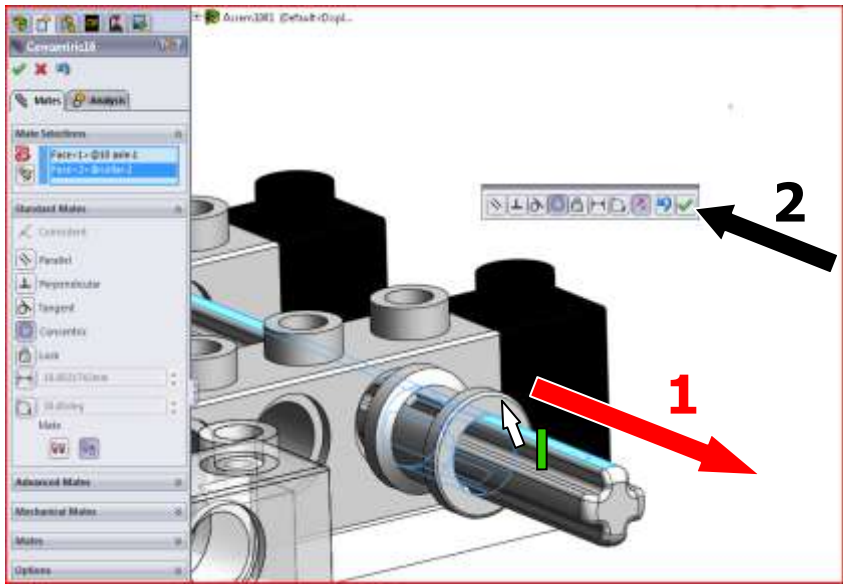


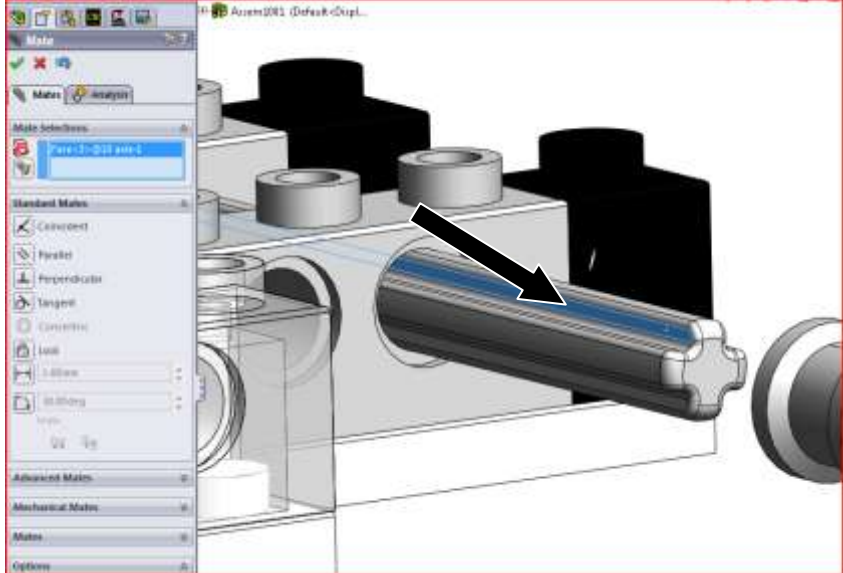




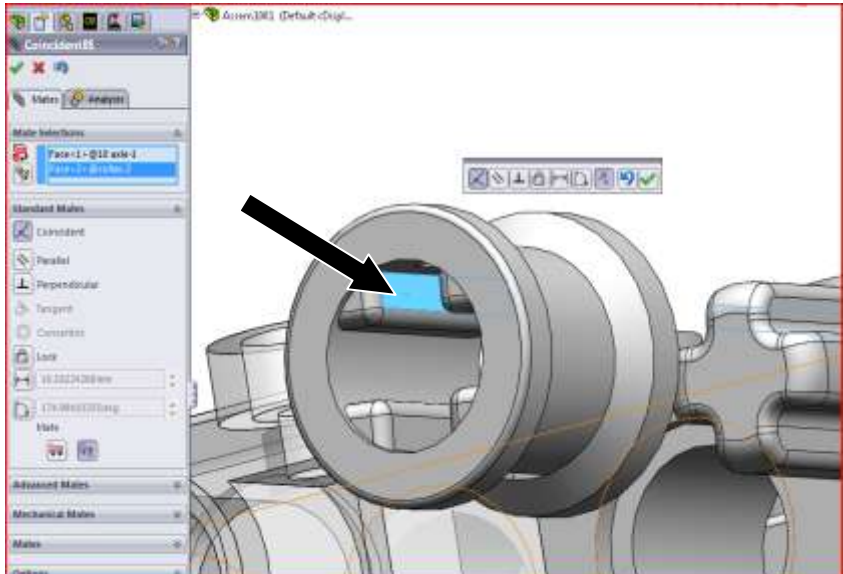


<p><b>89</b></p> <p>We'll now test if the steering section functions correctly.</p> <p><b>1.</b> Click the edge with the left mouse button.</p> <p>Hold the mouse button. And move the mouse from left to right.</p>  <p>If you've done everything correctly, the wheels should be moving!</p>	
<p><b>90</b></p> <p>We now return to the warehouse, for new parts.</p> <p><b>1.</b> Click: </p> <p><b>2.</b> Click: </p> <p><b>3.</b> We're looking for:</p> <p>1x  2x </p> <p>2x </p>	
<p><b>91</b></p> <p><b>1.</b> Click: </p> <p><b>2.</b> Click: </p> <p> Zoom in if necessary!</p> <p><b>3.</b> Click: </p>	




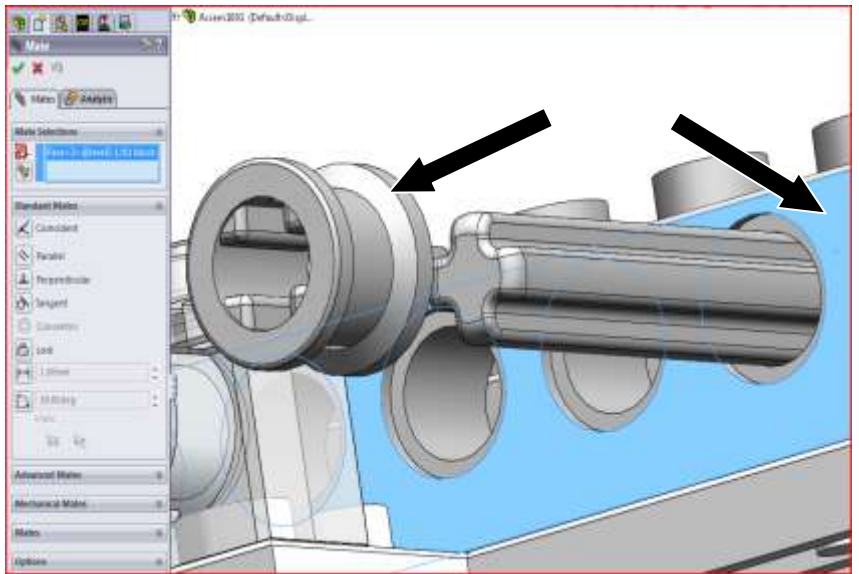


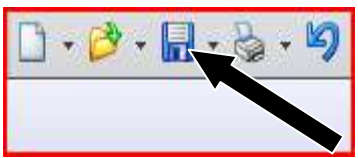
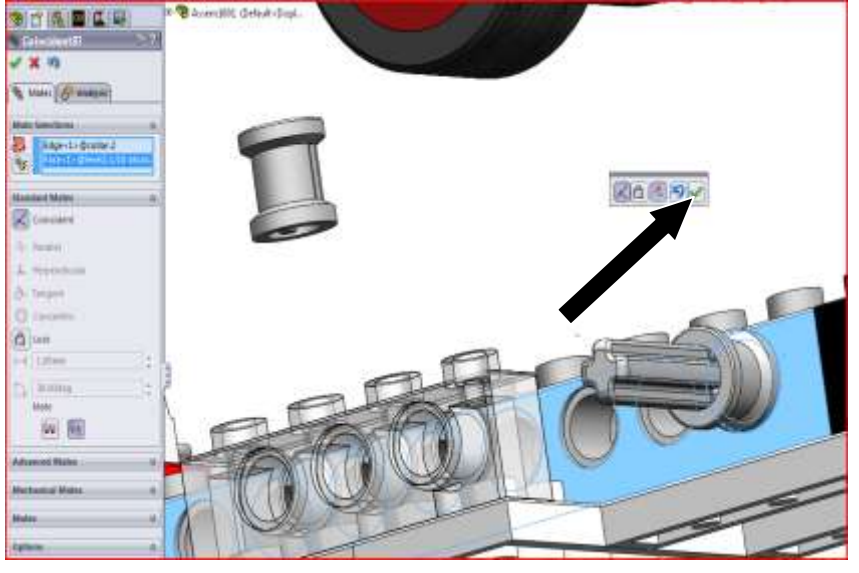


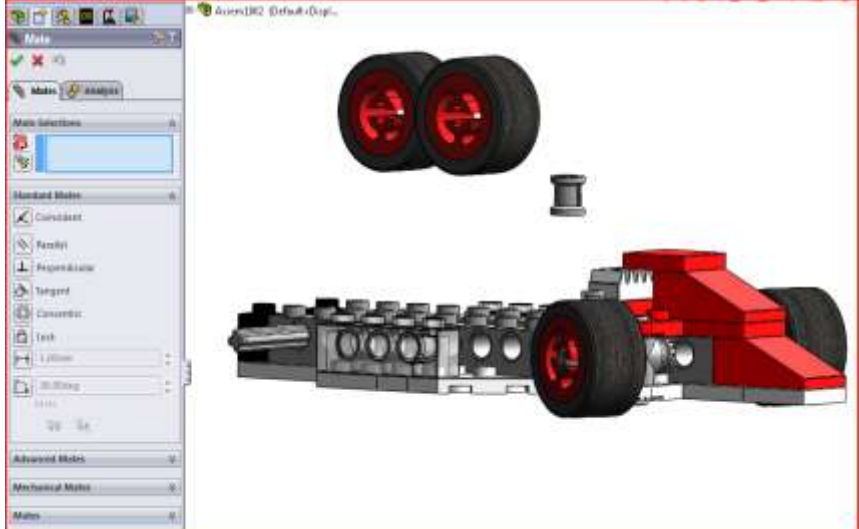



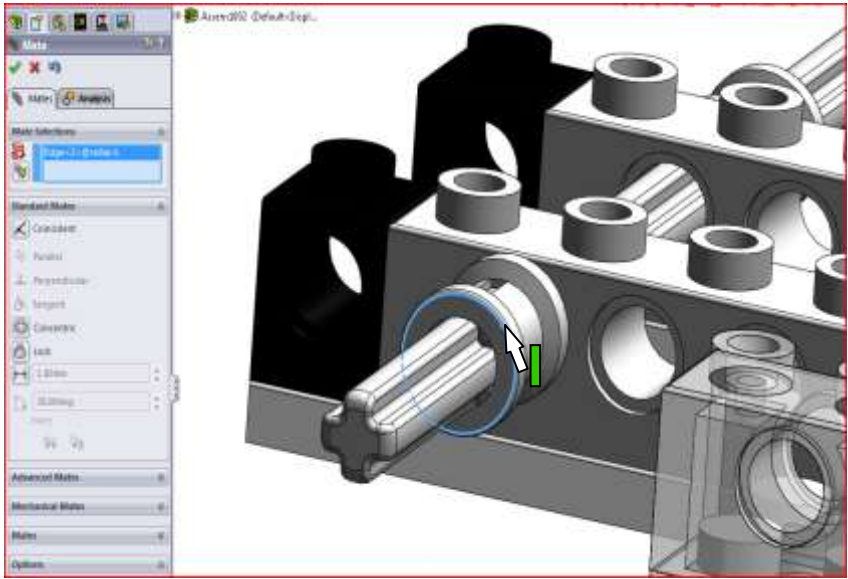

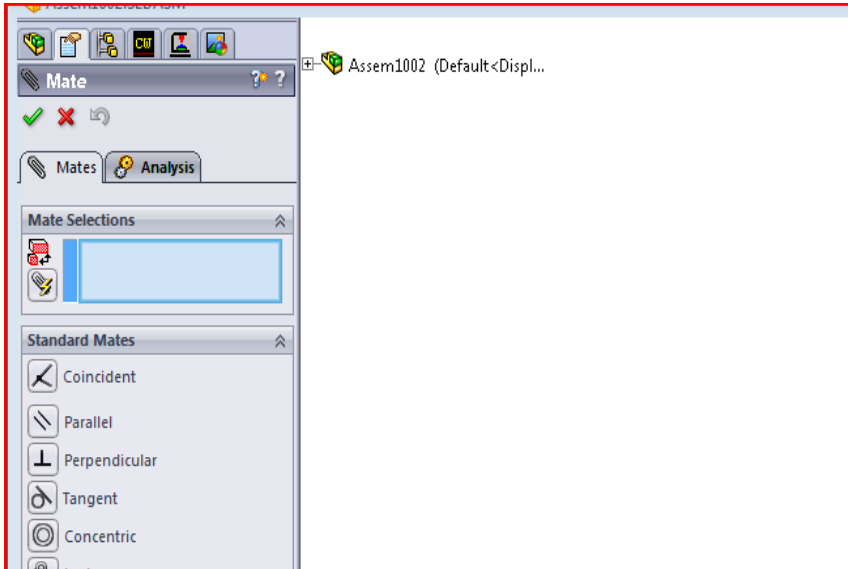
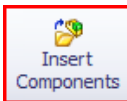



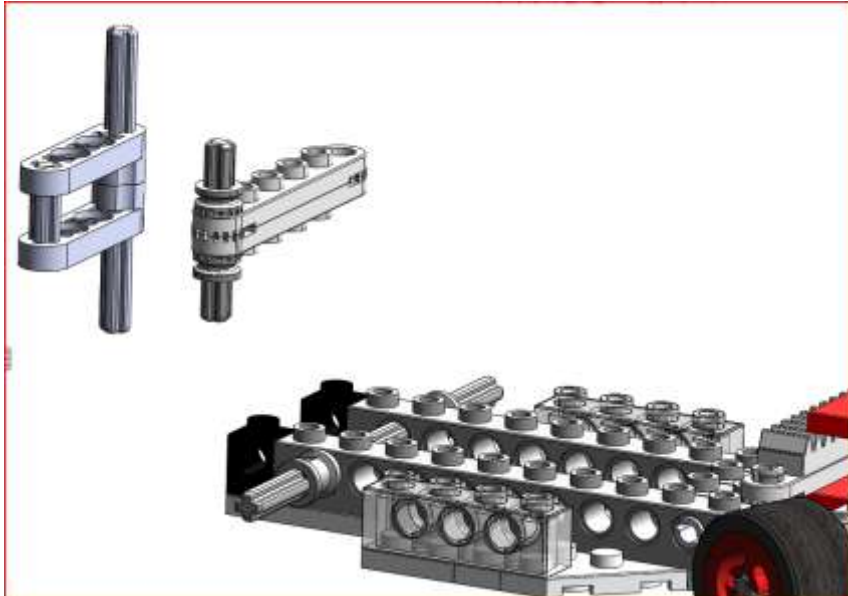
<p><b>92</b></p> <p>The axle will fit into the hole!</p>  All went well  <p>1. Click OK: </p> <p>2. Pick up the axle with the left mouse button and shift it approximately to the middle of the chassis.</p>  	
<p><b>93</b></p>  We're still in the <b>MATE</b> environment, so we'll simply continue! <p>1. Click: </p> <p>2. Click: </p>	
<p><b>94</b></p>  The following will happen.  <p>1. We'll now set the distance from the axle.</p> <p>2. Click: <b>Distance</b> </p>  <p>3. Enter here the size of 24mm!</p>	

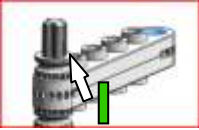
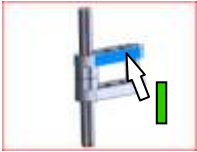





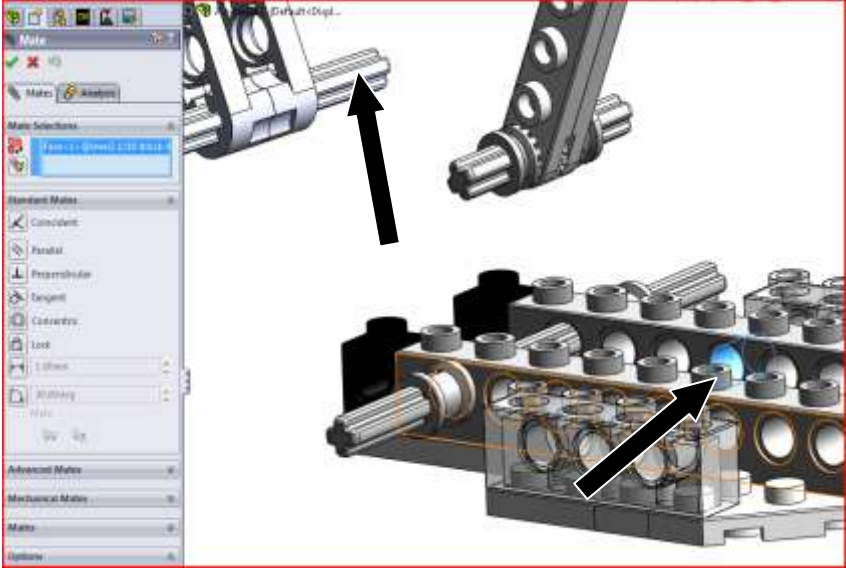


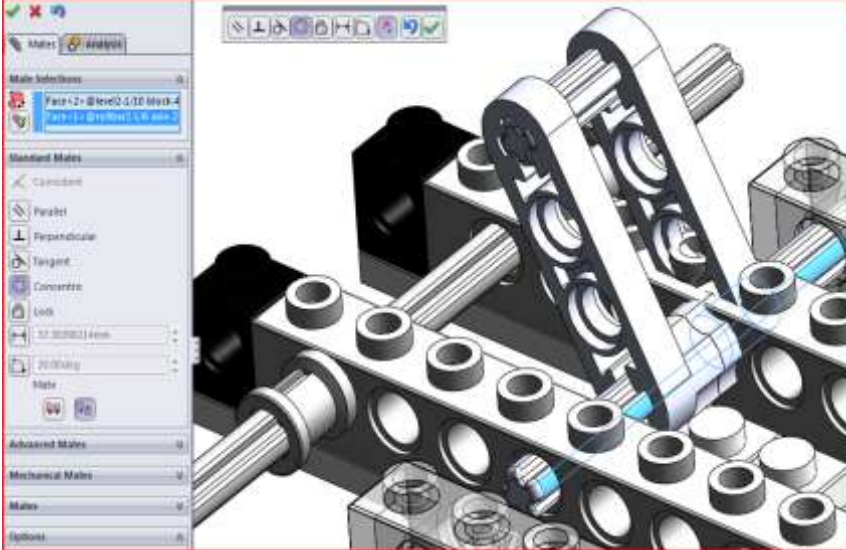
<p><b>95</b></p>  <p>1. Click OK: </p> <p>2. The axle now is set at a fixed size in the chassis!</p> <p> Have you made an error?</p> <p>3. Click: </p> <p>And repeat step (93-94)!</p>	
<p><b>96</b></p> <p> We're still in the <b>MATE</b> environment, so we'll simply continue!</p> <p>1. Pick it up with the left mouse button:</p>  <p>move to:</p> <p>2. Pick it up with the right mouse button</p>  <p>Move and rotate it to:</p>	
<p><b>97</b></p> <p>1. Click: </p> <p>2. Click: </p>	

<p><b>98</b></p>  This is the final result! We'll now move the spacer bush: <b>1.</b> Pick it up with the left mouse button:  move to:  <b>2.</b> Click: 	
<p><b>99</b></p>  <p><b>1.</b> Click:</p> <p><b>2.</b> Press and hold the mouse's scroll wheel, and move the mouse.</p>  <p>Refer to the example on the next page:</p>	
<p><b>100</b></p>  <p><b>1.</b> Click:</p> <p><b>2.</b> Click: </p>  The keyway now is correctly positioned.  Zoom out again.	



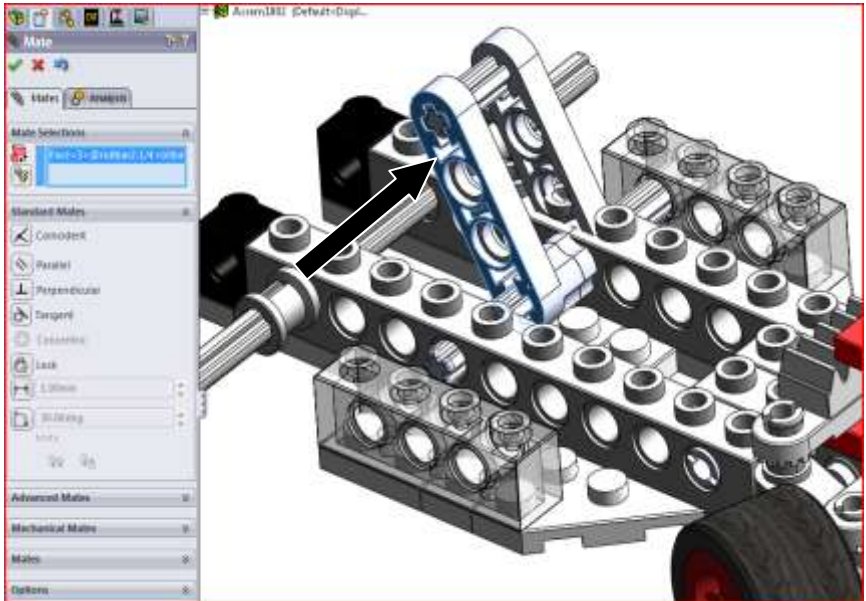

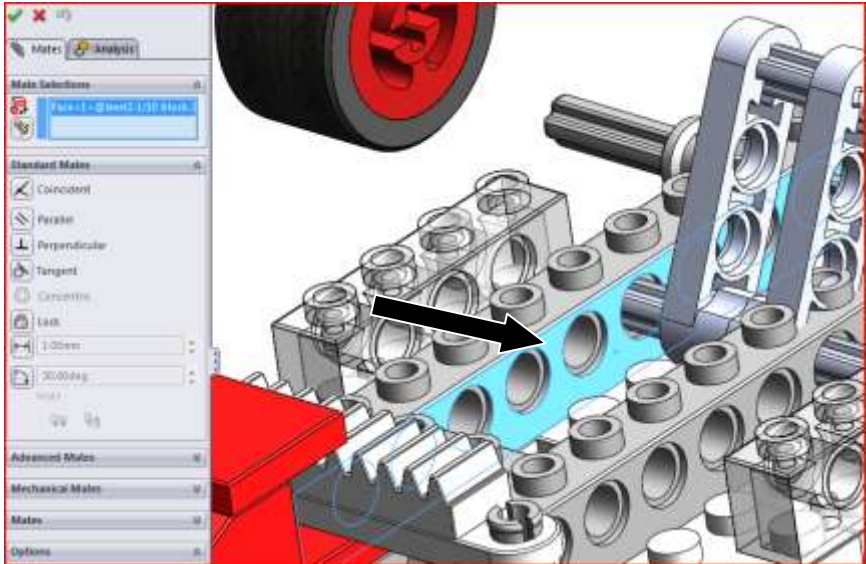

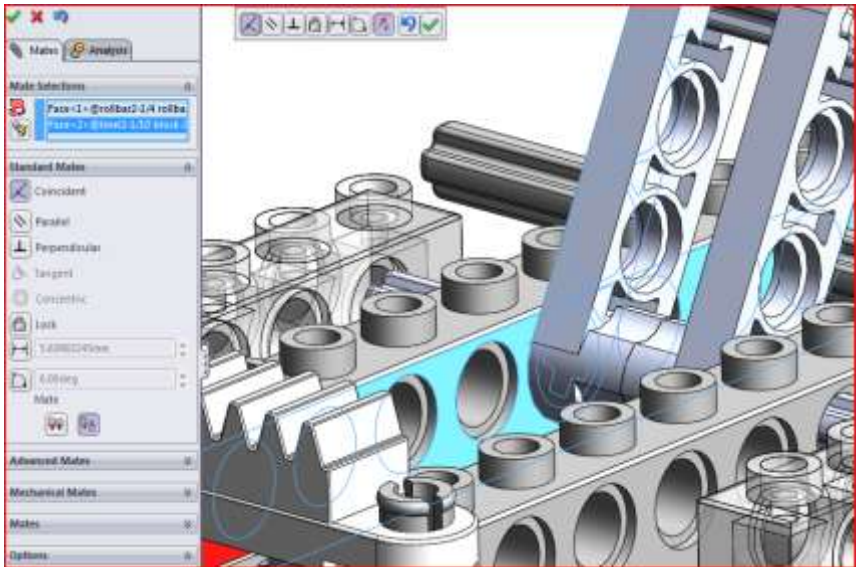





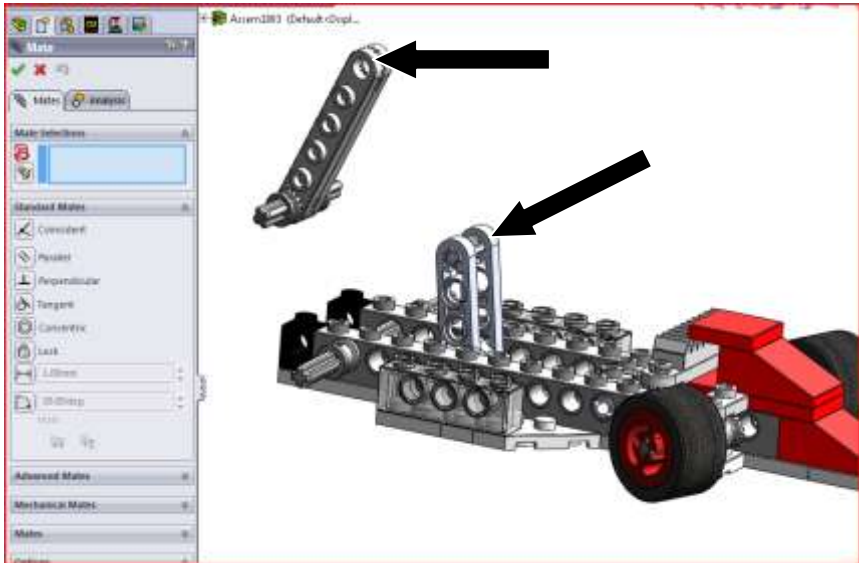


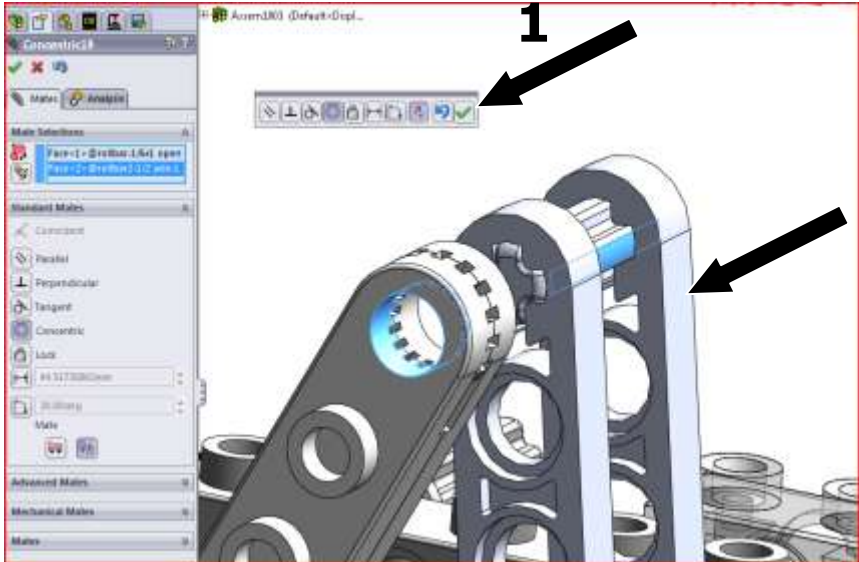

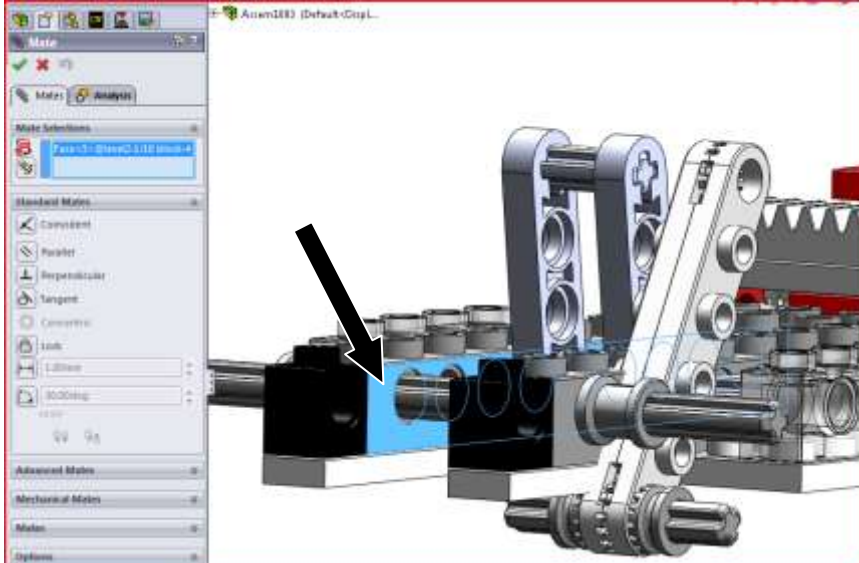
<p><b>101</b></p>  <p>We're still in the <b>MATE</b> environment, so we'll simply continue!</p> <p>1. Click: </p> <p>2. Click: </p> <p>Make sure to click the edge!!!!</p>	
<p><b>102</b></p>  <p>You'll see that both parts are nicely connected together.</p> <p>1. Click: </p> <p>Let's save our data once again for the sake of safety!</p> <p>Click Save:</p> 	
<p><b>103</b></p> <p>1. Press and hold the mouse's scroll wheel, and move the mouse.</p>  <p>2. Make sure the model is positioned on screen as illustrated opposite.</p> <p>3. Do the same with the spacer bush, make sure it also is at the axle!</p>  <p>You don't remember how?</p> <p>Repeat steps 96 through 102.</p>	

<p><b>104</b></p> <p>1. Zoom in as in the example opposite.</p> <p>We'll now test if the axle is able to turn.</p> <p>2. Click the edge with the left mouse button.</p> <p>Hold the mouse button. And move the mouse from left to right.</p>  <p>If you've all done as it should, the axle should be moving!!</p>	
<p><b>105</b></p> <p>1. Close the <b>MATE</b> function:</p> <p>2. Click: </p>	
<p><b>106</b></p> <p>We now return to the warehouse, for new parts.</p> <p>1. Click: </p> <p>2. Click: </p> <p>3. We're looking for:</p> <p>1x  Rollbar.sldasm</p> <p>1x  Rollbar2.sldasm</p>	

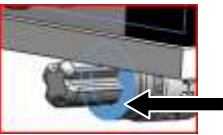



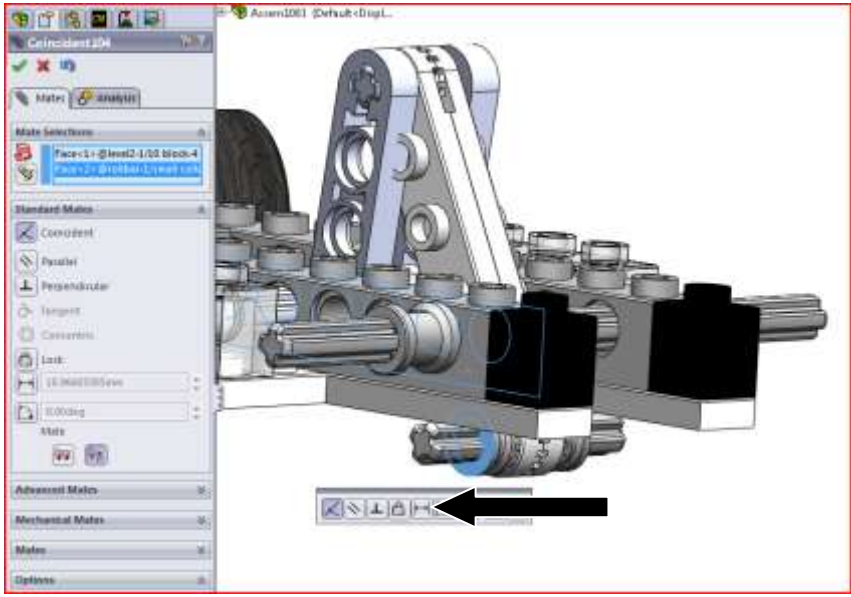

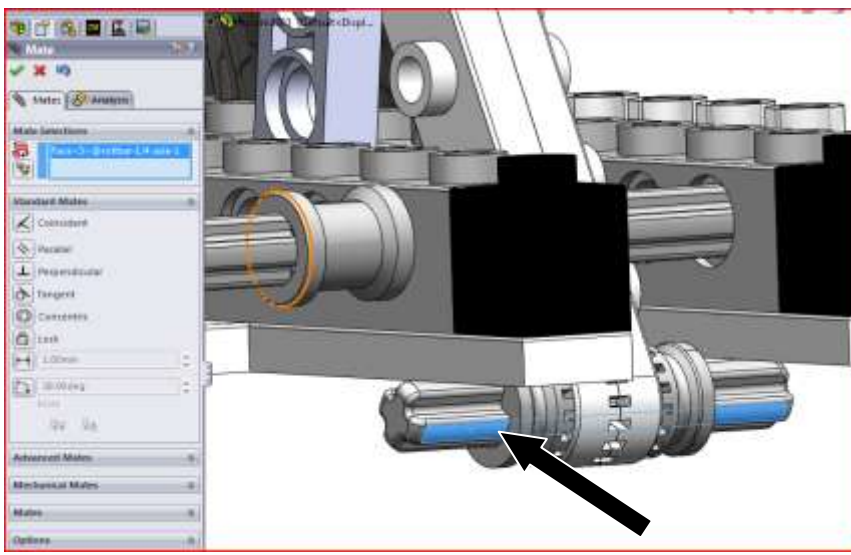
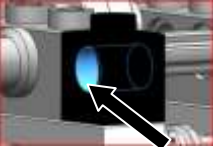
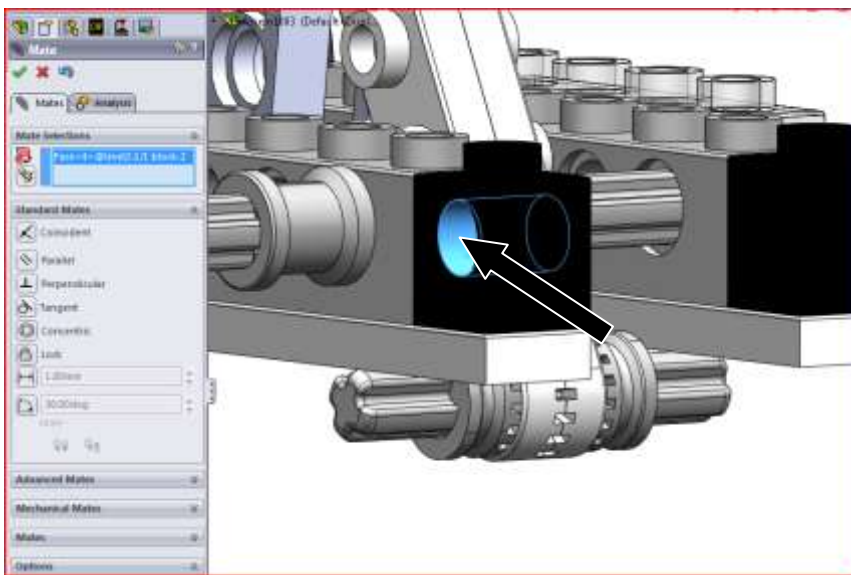
<p><b>107</b></p>	<p><b>1.</b> Click with the right mouse button  and rotate until: see opposite!</p> <p><b>2.</b> Click with the right mouse button  and rotate until: see opposite!</p>	
<p><b>108</b></p>	<p><b>1.</b> Click: </p> <p><b>2.</b> Click: </p> <p> Zoom in if necessary!</p> <p><b>3.</b> Click: </p>	
<p><b>109</b></p>	<p><b>1.</b> Click: </p> <p><b>2.</b> It may also happen that the part goes straight through another part!</p> <p> No worry! We'll handle this in the next step!</p>	




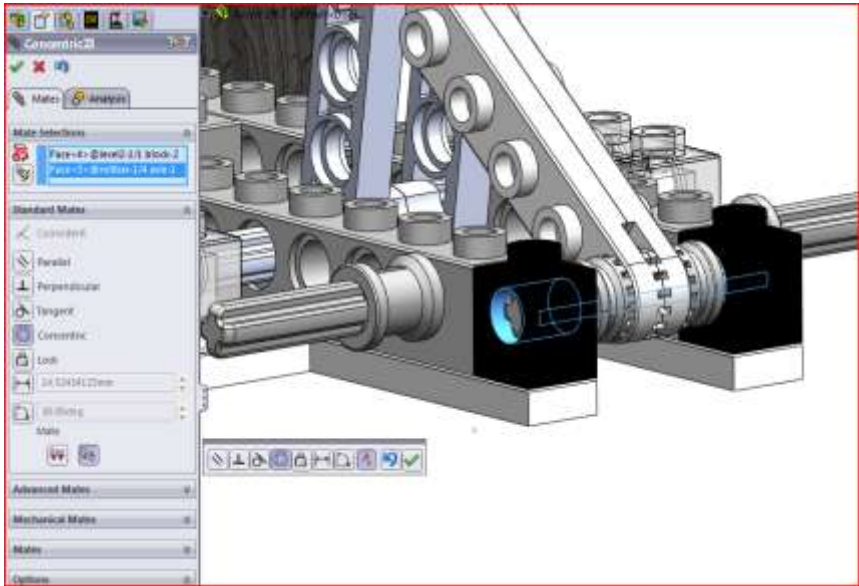


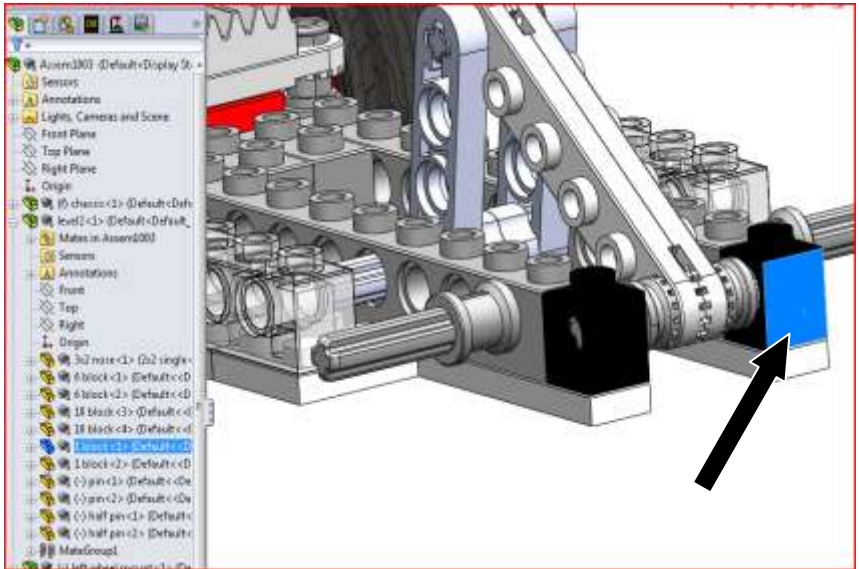

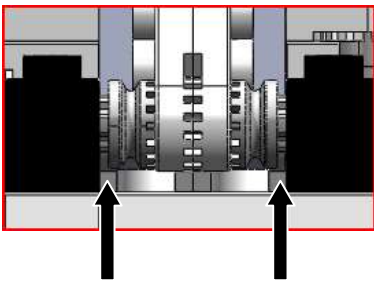
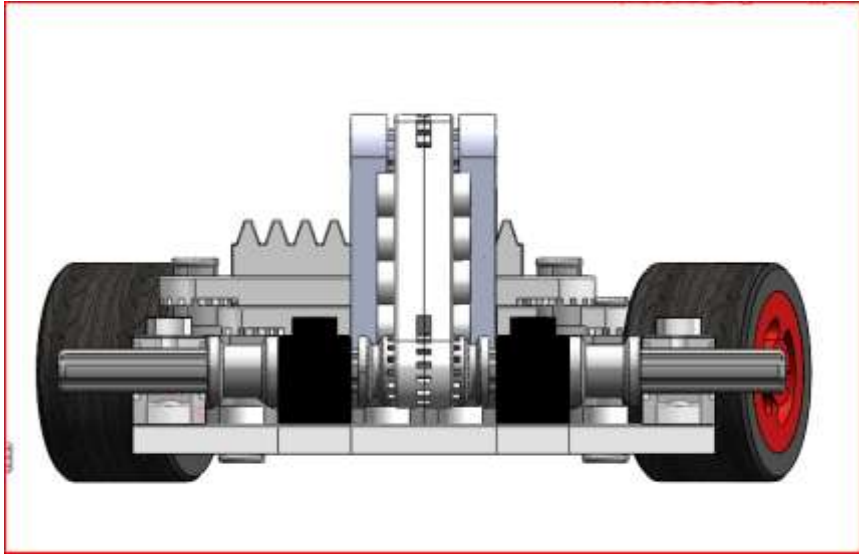
<p><b>110</b></p> <p><b>1. Click:</b></p>  <p><b>2. Press and hold the mouse's scroll wheel, and move the mouse.</b></p> 	
<p><b>111</b></p> <p><b>1. Make sure the model is positioned on screen as illustrated opposite.</b></p> <p><b>2. Click:</b></p> 	
<p><b>112</b></p> <p><b>1. Click:</b> </p> <p><b>2. Zoom out again to display the next part again!</b></p>	

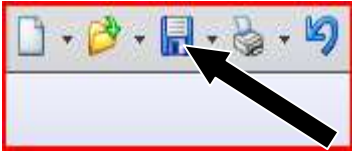
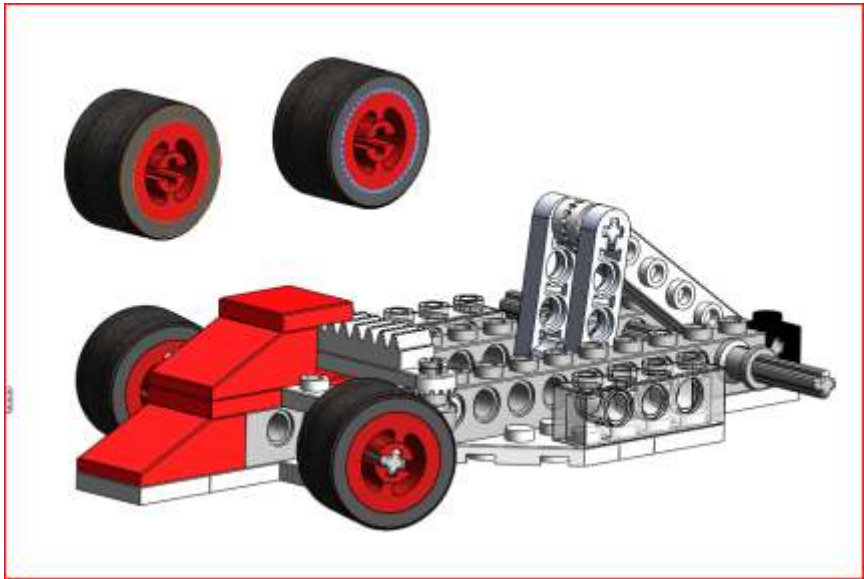

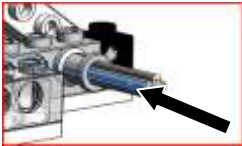

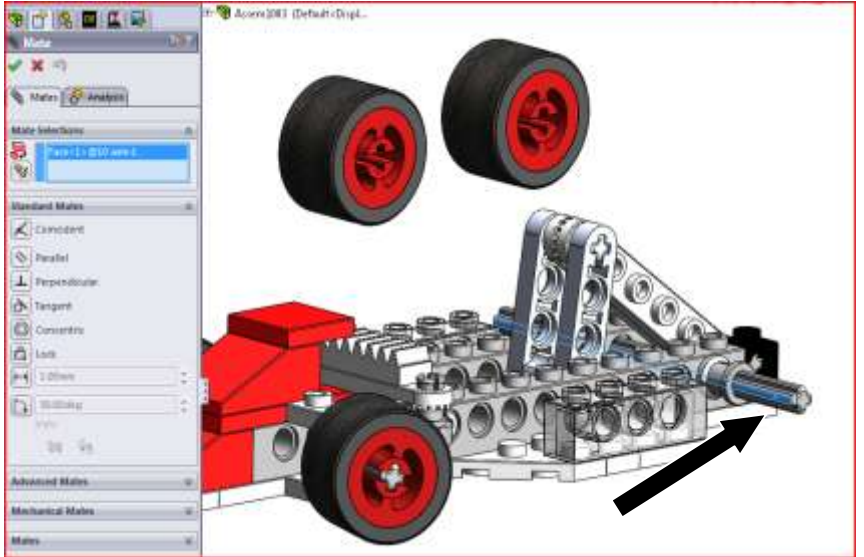

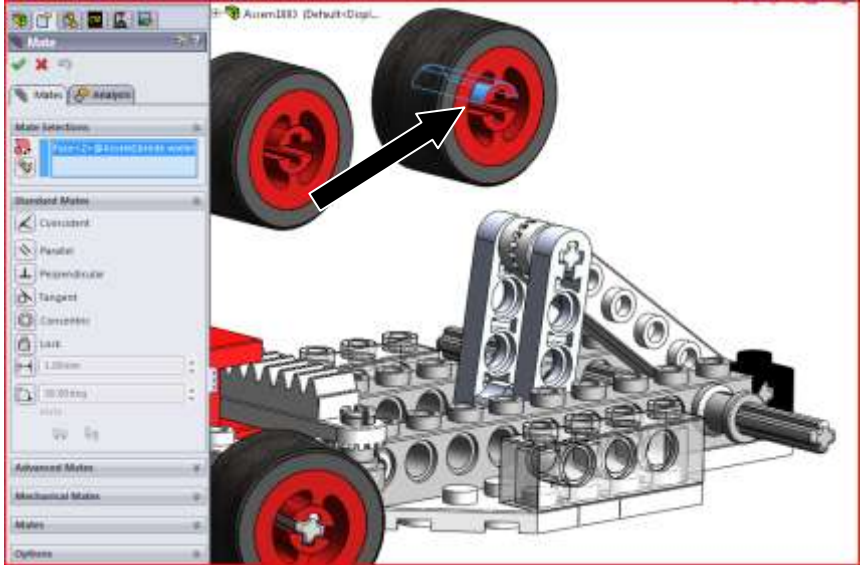
<p><b>113</b></p> <p> We're still in the <b>MATE</b> environment, so we'll simply continue!</p> <p>1. Click: </p> <p>2. Click: </p>	
<p><b>114</b></p> <p>1. Click: </p> <p>2. The opposite illustration shows the piece is positioned adjacent to the middle.</p> <p> We'll correct that!</p> <p>3. Using the scroll wheel, rotate the model again (see next image).</p>	
<p><b>115</b></p> <p>1. Click: </p> <p>2. Using the scroll wheel, rotate the model again (see next image).</p>	



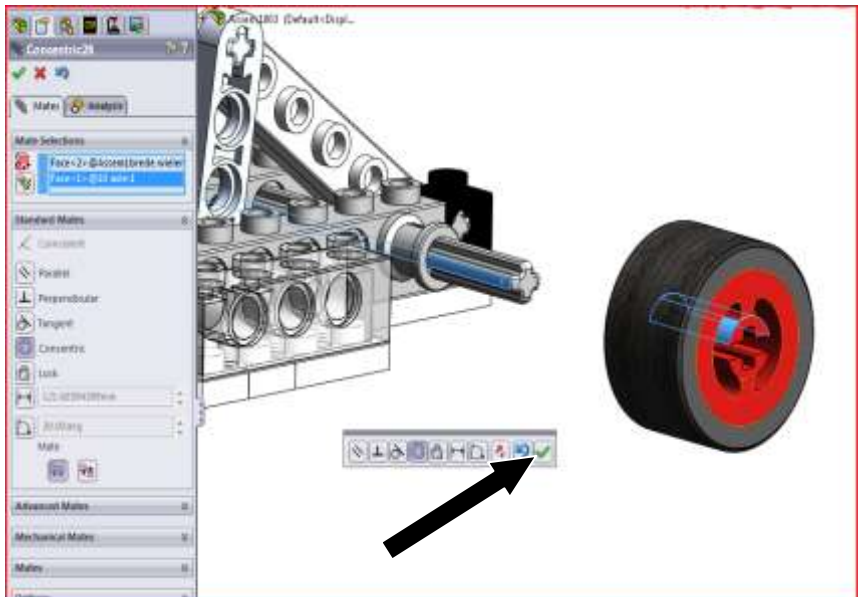
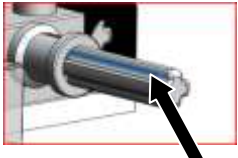
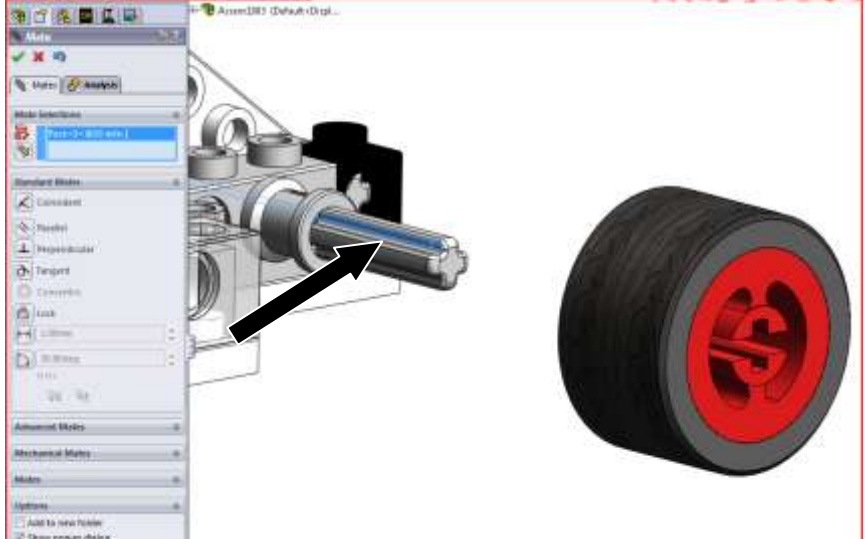



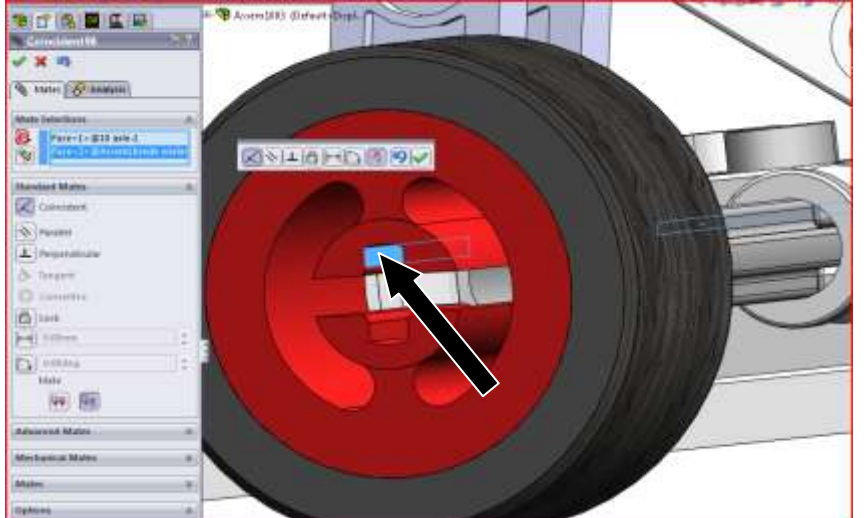


<p><b>116</b></p> <p>1. Click: </p> <p>2. Click: <b>Distance</b></p> <p></p> <p>Enter a size of 0,825mm.</p> <p>3. Click: </p> <p></p> <p>It now is in the middle!</p>	
<p><b>117</b></p> <p>1. Click: </p>	
<p><b>118</b></p> <p>1. Click: </p> <p>2. The axle now enters the hole!</p>	

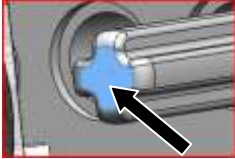

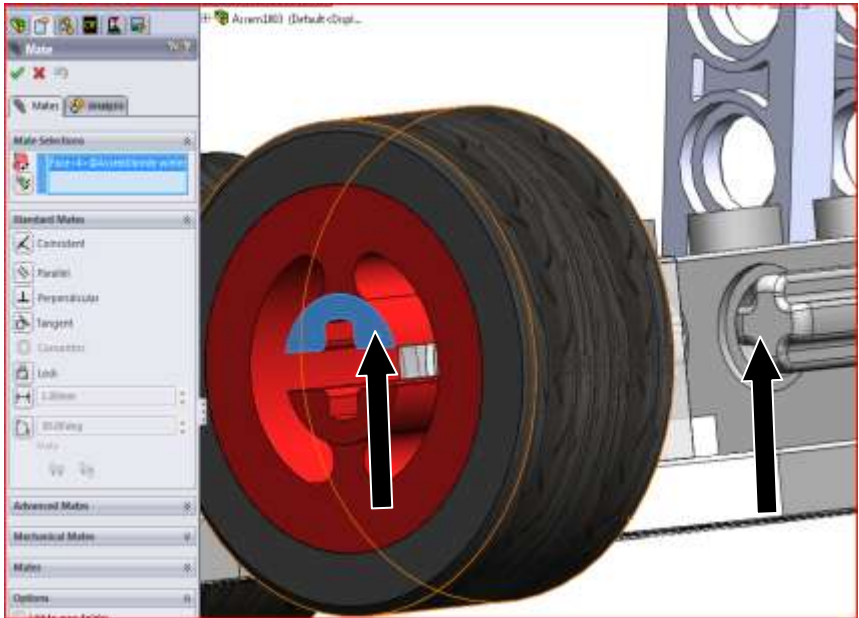


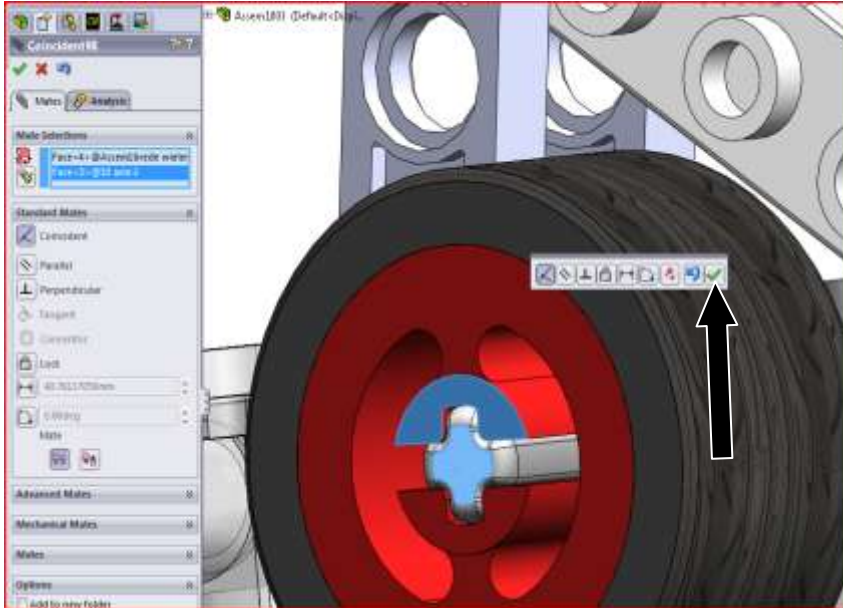



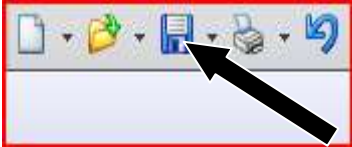
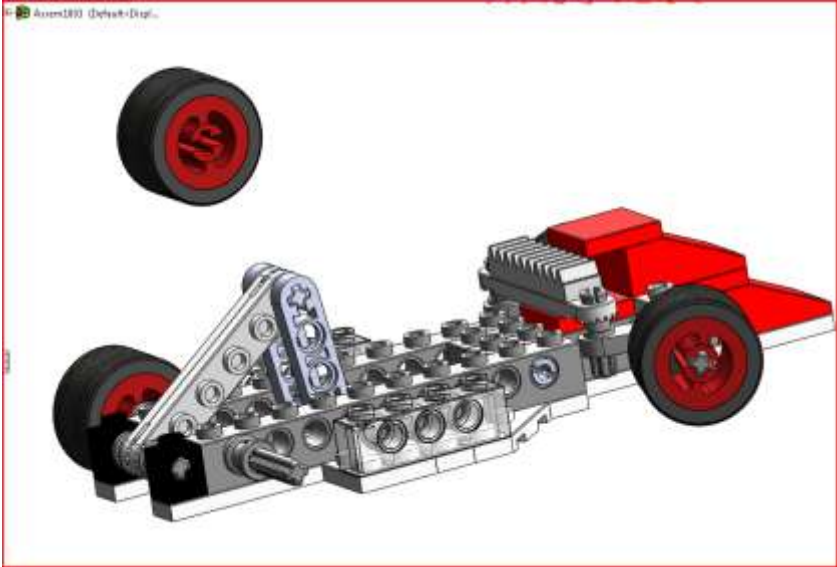
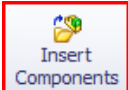
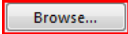


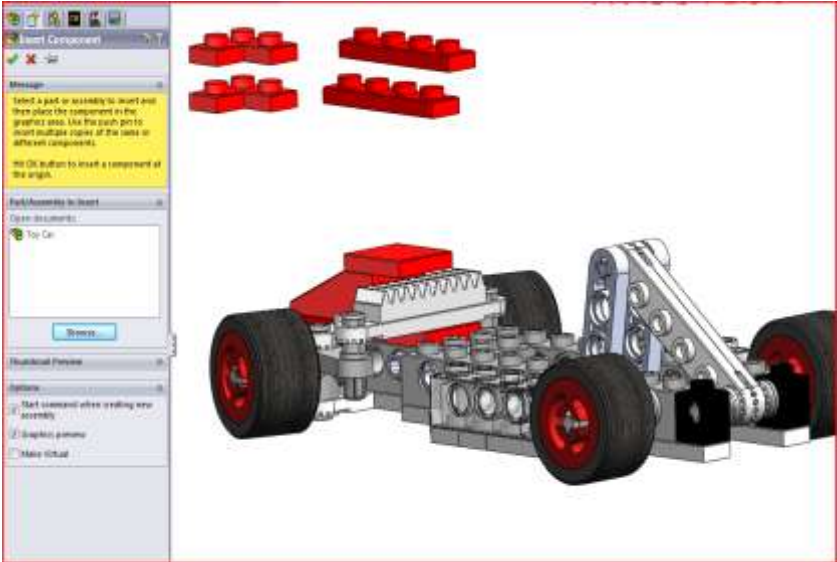


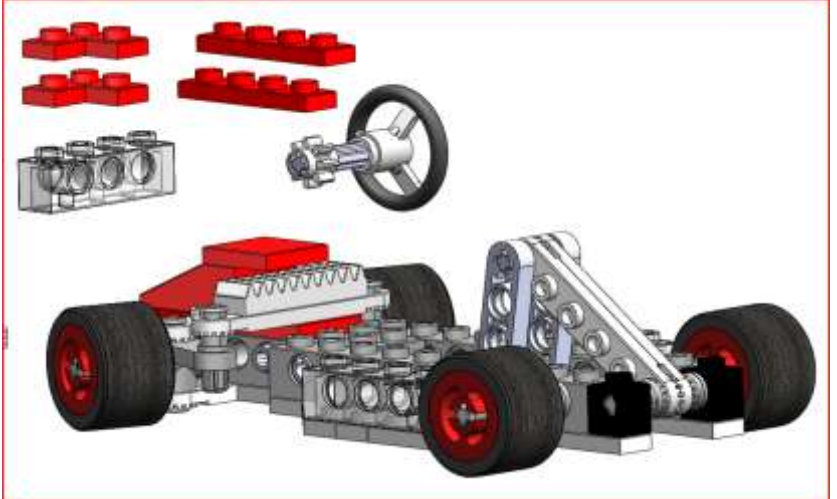
<p>119</p> <p>1. Click: </p>	
<p>120</p> <p>1. Click: </p> <p>2. Press the spacebar!</p> <p>3. Double-click:</p> <p><b>Normal To:</b></p> 	
<p>121</p> <p> You'll see the part now is well distributed among the previous part!</p> 	





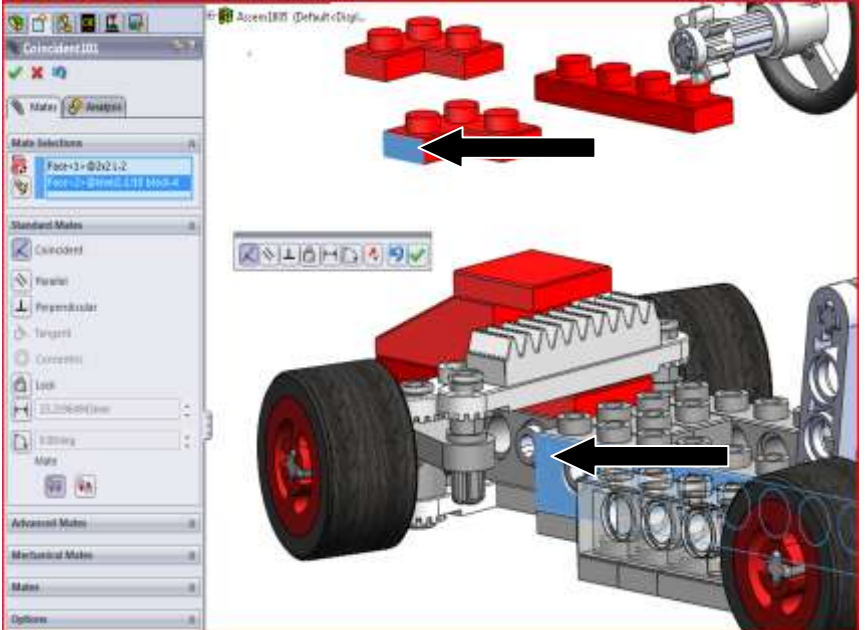

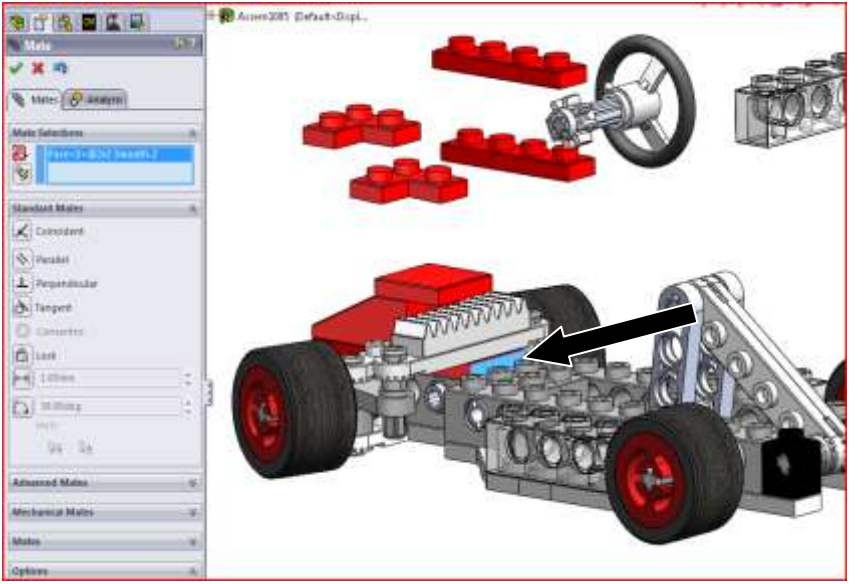


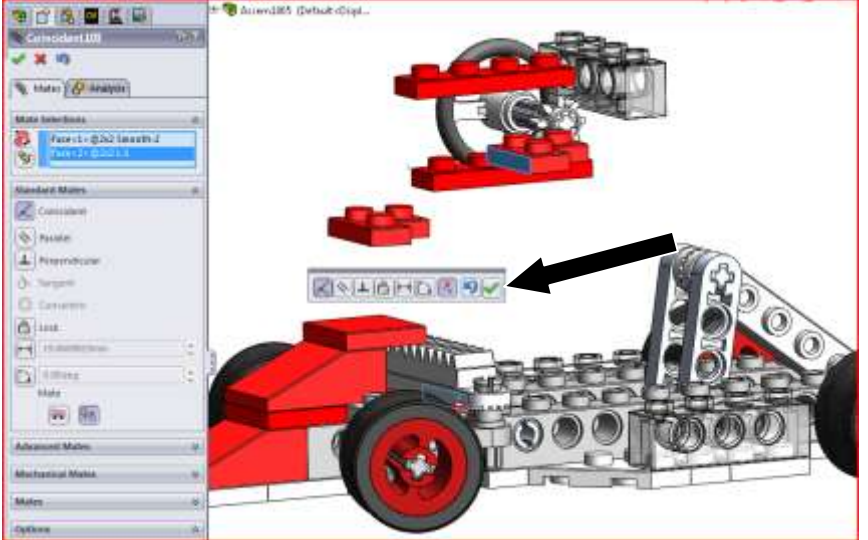
<p><b>122</b></p> <p><b>1.</b> Using the scroll wheel, rotate the model. See the image opposite.</p> <p>Let's save our data once again for the sake of safety!</p> <p>Click Save:</p> 	
<p><b>123</b></p> <p>We'll now mount the rear wheels.</p> <p><b>1.</b> Click: </p> <p><b>2.</b> Click: </p> <p> Zoom in if necessary!</p>	
<p><b>124</b></p> <p><b>1.</b> Click: </p>	

<p><b>125</b></p> <p> As a result, the wheel and the axle will be aligned.</p> <p>1. Click: OK </p>	
<p><b>126</b></p> <p>1. Click: </p>	
<p><b>127</b></p> <p>1. Using the scroll wheel, rotate the model. See the image opposite.</p> <p>2. Click: </p> <p>3. Click OK: </p> <p> The wheel and the axle are now well aligned with respect to each other.</p>	



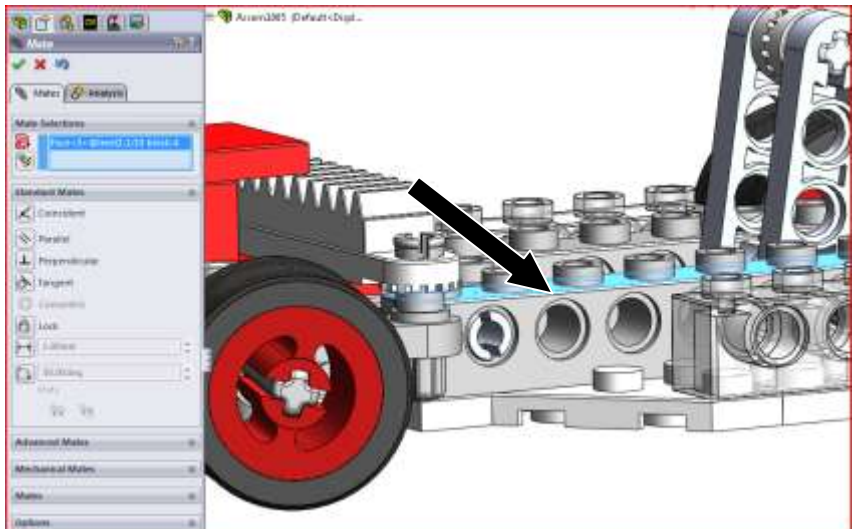
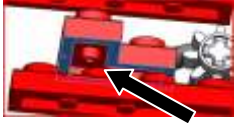


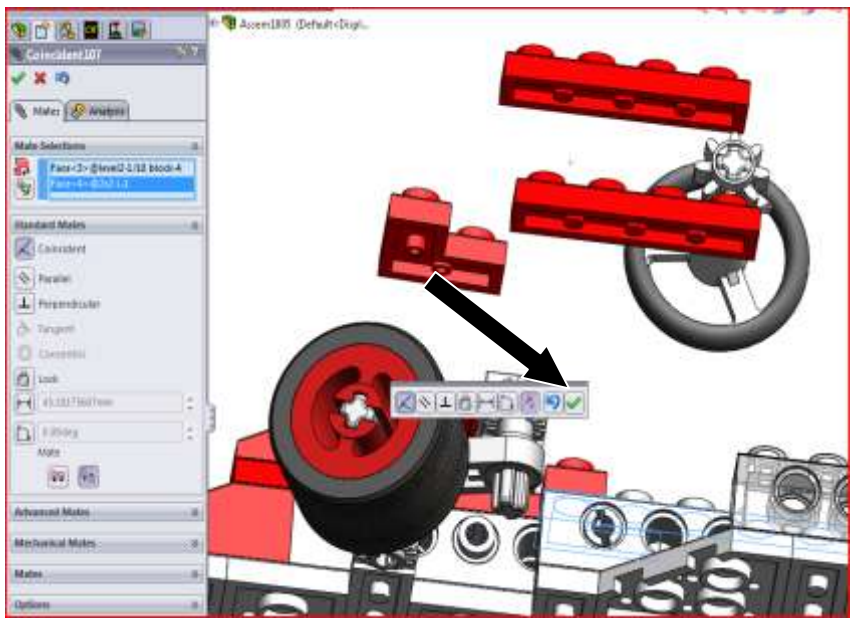


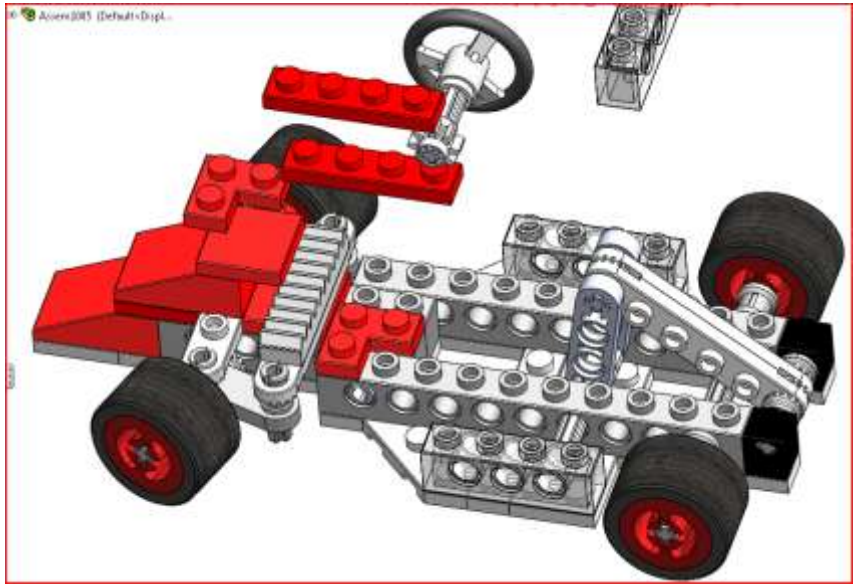




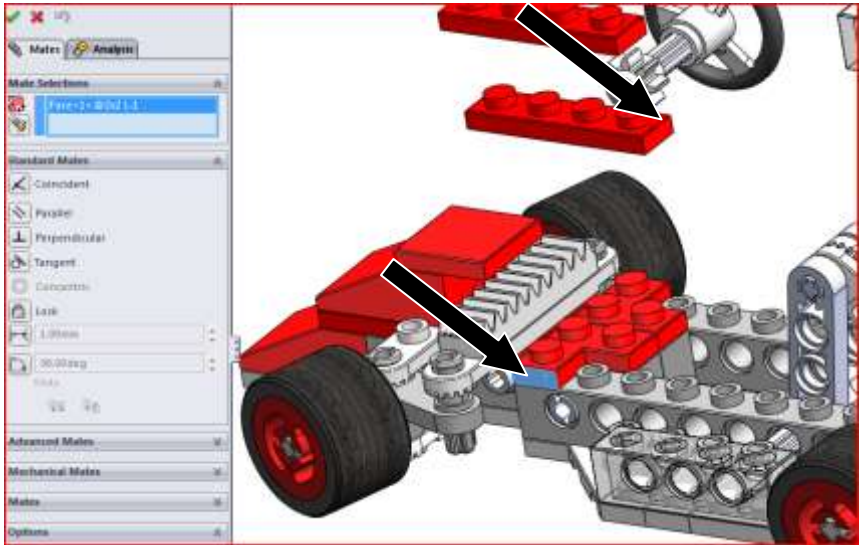


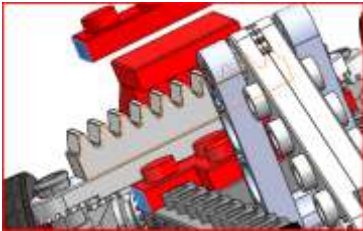

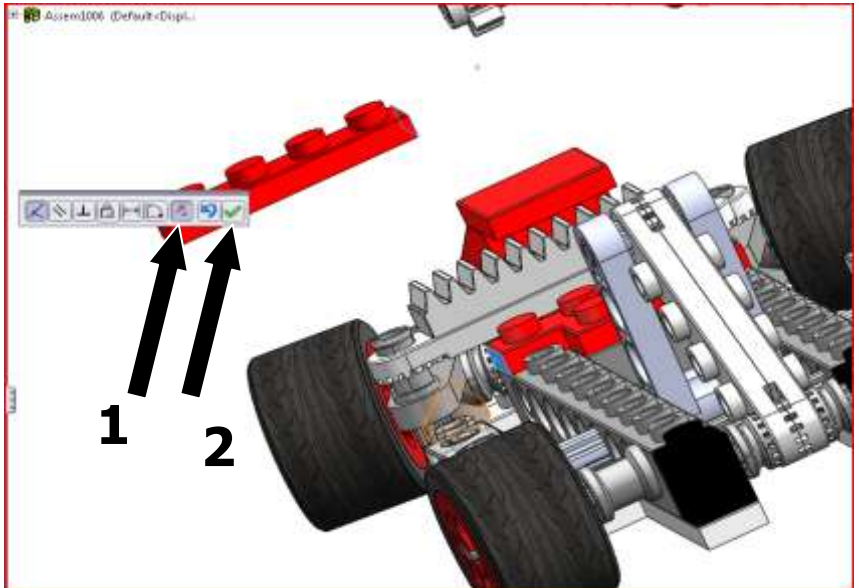
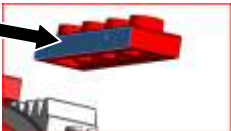
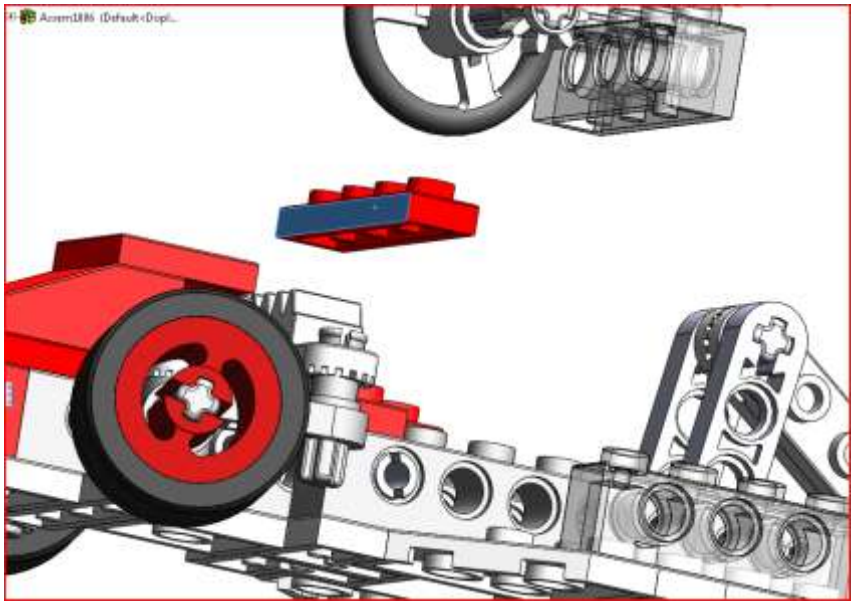
<p><b>128</b></p>	<p><b>1.</b> Using the scroll wheel, rotate the model. See the image opposite.</p> <p><b>2. Click:</b> </p> <p><b>3. Click:</b> </p>	
<p><b>129</b></p>	<p> As a result, the wheel is well fixed to the axle.</p> <p><b>1. Click OK:</b> </p>	

<p><b>130</b></p> <p>1. Using the scroll wheel, rotate the model. See the image opposite.</p> <p> Now do the same for the second rear wheel; use what you've learned in steps 123 through 129</p> <p>Let's save our data once again for the sake of safety!</p> <p>Click Save:</p> 	
<p><b>131</b></p> <p>We now return to the warehouse, for new parts.</p> <p></p> <p>1. Click: <b>Insert Components</b></p> <p>2. Click: </p> <p>3. We're looking for:</p> <p> 2x 2x L.sldprt</p> <p> 2x Flat1x4.sldprt</p>	
<p><b>132</b></p> <p> 1x 4 block.sldprt</p> <p> 1x steering asm</p>	



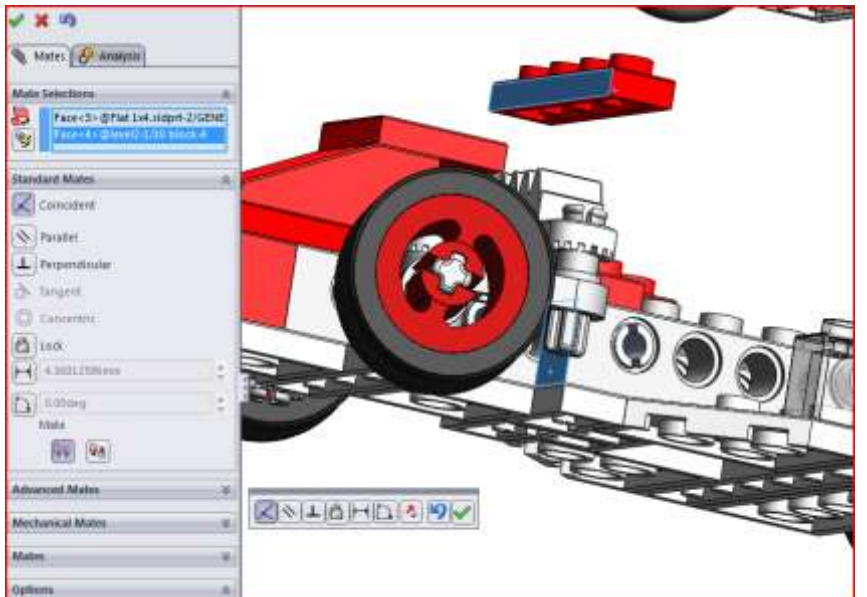
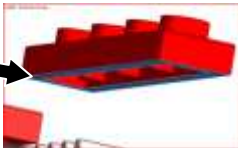
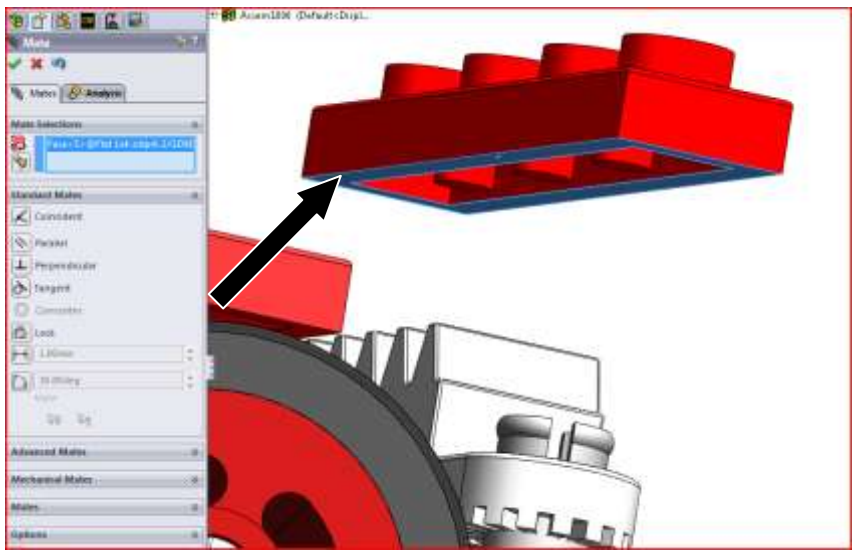


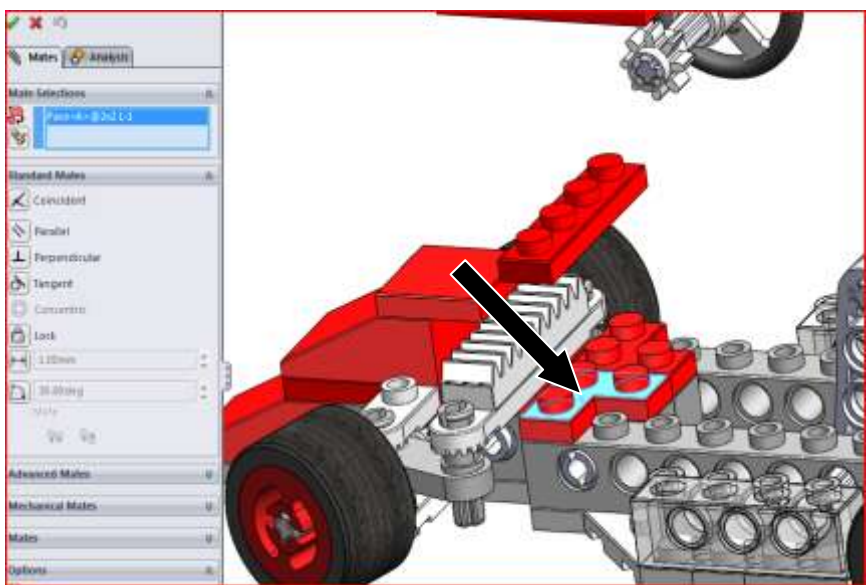
<p><b>133</b></p> <p>We're going to mount more things!</p> <p>1. Click: </p> <p>2. Click: </p> <p>3. Click: </p> <p>4. Click OK: </p>	
<p><b>134</b></p> <p>1. Click: </p>	
<p><b>135</b></p> <p>1. Using the scroll wheel, rotate the model. See the image opposite.</p> <p>2. Click: </p> <p>3. Click OK: </p>	





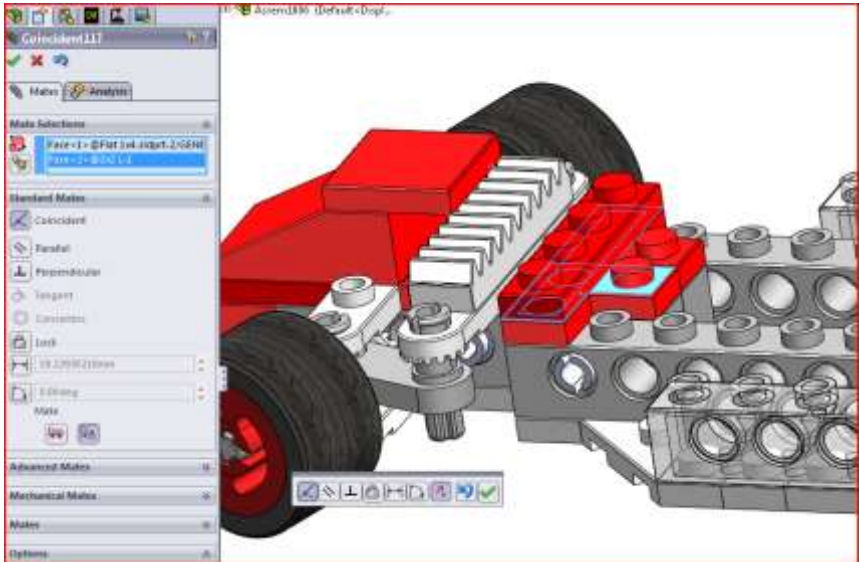



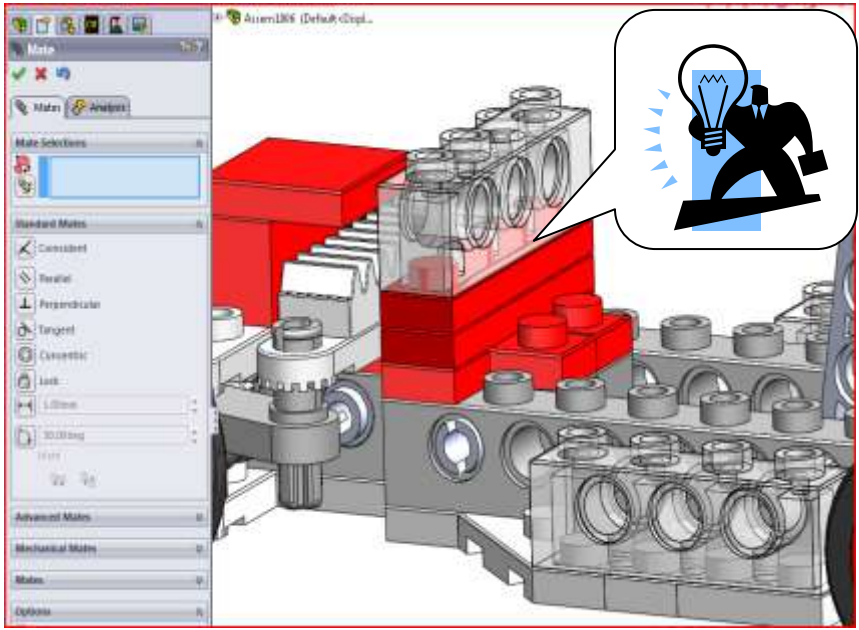
<p><b>136</b></p> <p> We're still in the <b>MATE</b> environment, so we'll simply continue!</p> <p><b>1. Click:</b> </p> <p>Zoom in if necessary!</p>	
<p><b>137</b></p> <p><b>1. Click:</b> </p> <p><b>2. As you can see, the part is properly positioned.</b></p> <p></p> <p><b>3. Click OK:</b> </p>	
<p><b>138</b></p> <p><b>1.</b> Using the scroll wheel, rotate the model. See the image opposite.</p> <p><b>2.</b> Below (and opposite) you can see how the part must be positioned.</p> <p></p> <p><b>3.</b> Do the next ones by yourself!</p> <p></p>	



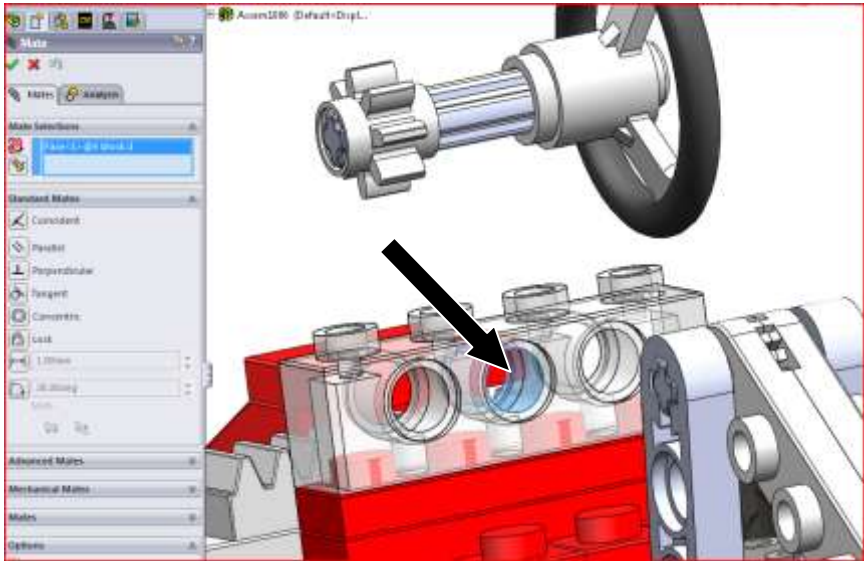



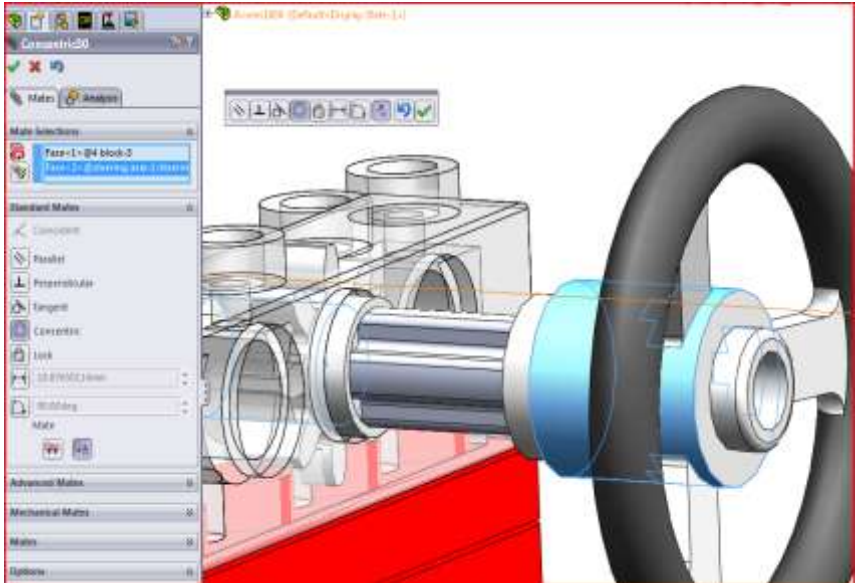
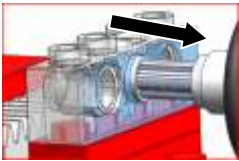
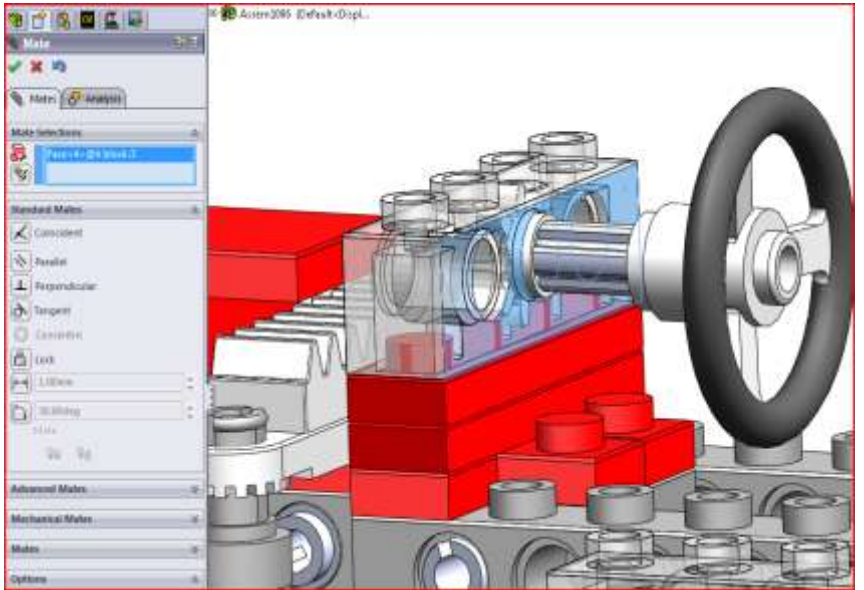
<p>139</p> <p><b>Let's move on!</b></p> <p>1. Click: </p> <p>2. Click: </p>	
<p>140</p> <p> There's a fair chance the part is not correctly positioned!</p> <p>1. Therefore, click: </p> <p>You can see below the part is now correctly positioned!</p> <p></p> <p>2. Click: </p>	
<p>141</p> <p>1. Click: </p>	




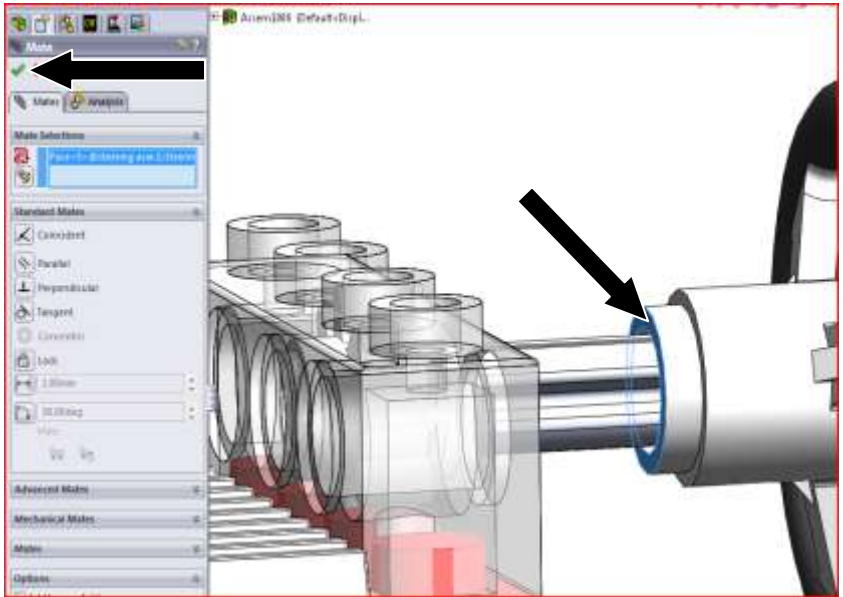


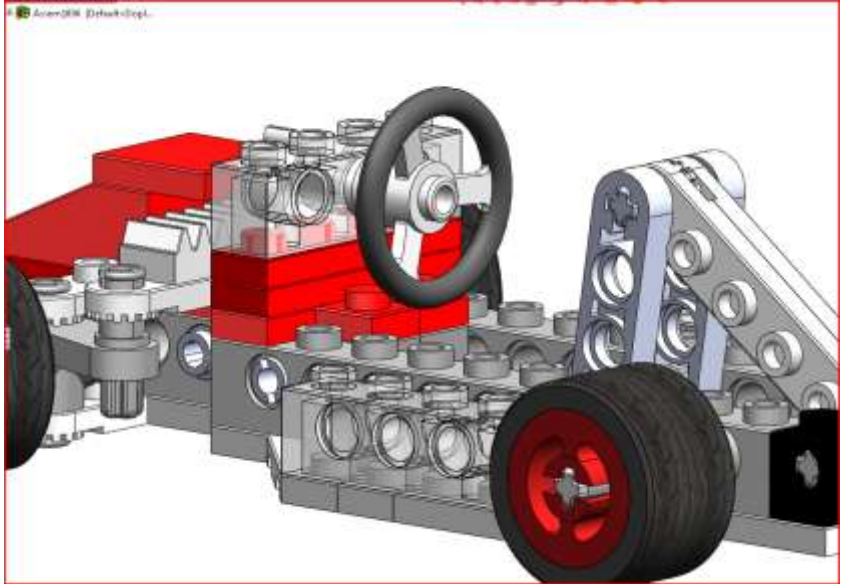
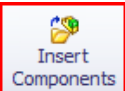
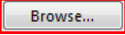




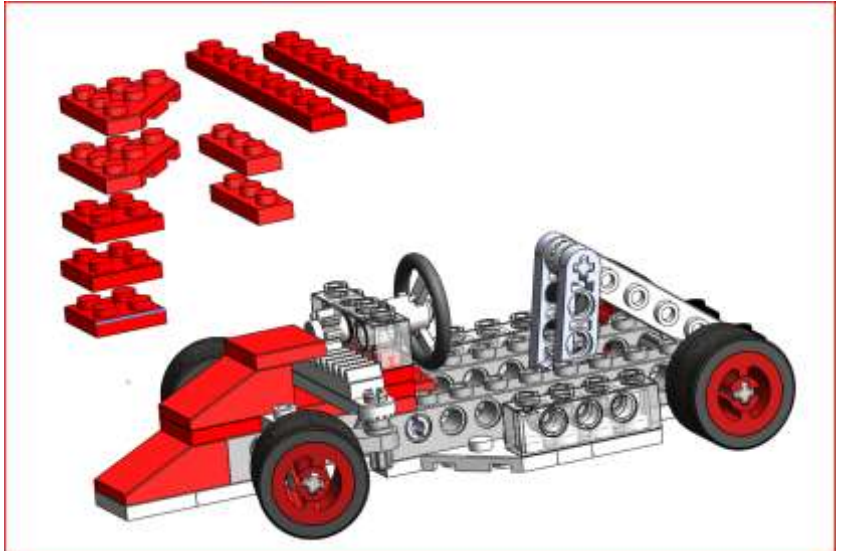


<p><b>142</b></p> <p>1. Click: </p> <p>2. Click: </p>	
<p><b>143</b></p> <p>1. Using the scroll wheel, zoom in on the model. The image opposite is displayed.</p> <p>2. Click: </p>	
<p><b>144</b></p> <p>1. Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p>2. Click: </p> <p>3. Both parts now fit well together on top of each other.</p> <p> See the next step!</p>	

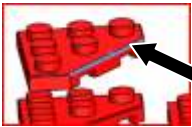
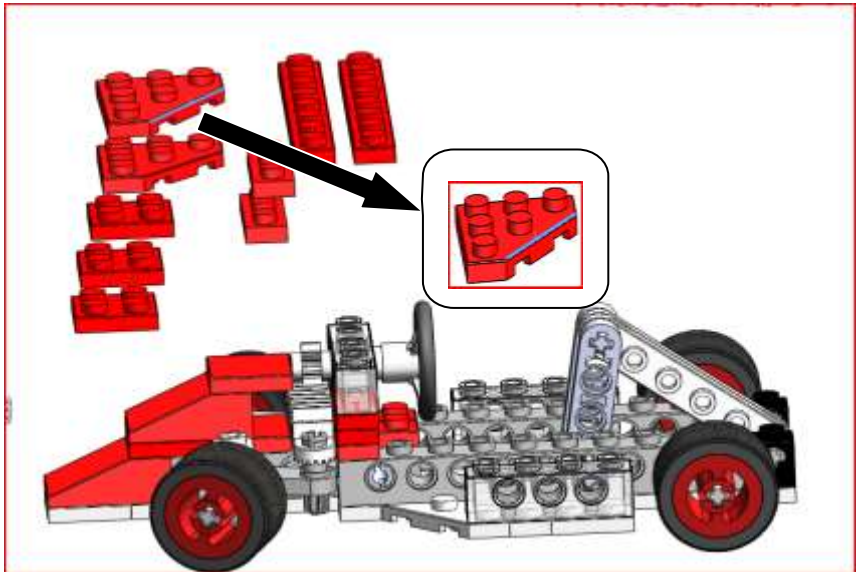
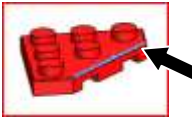
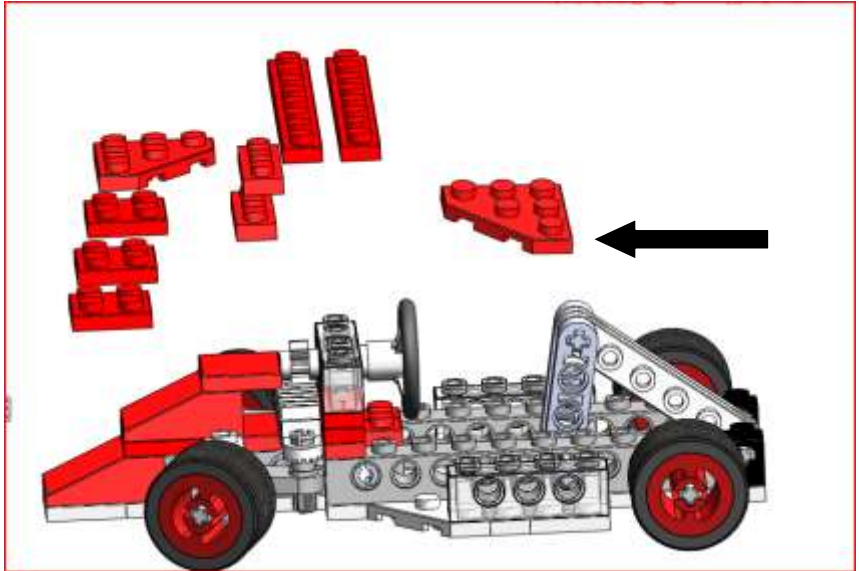




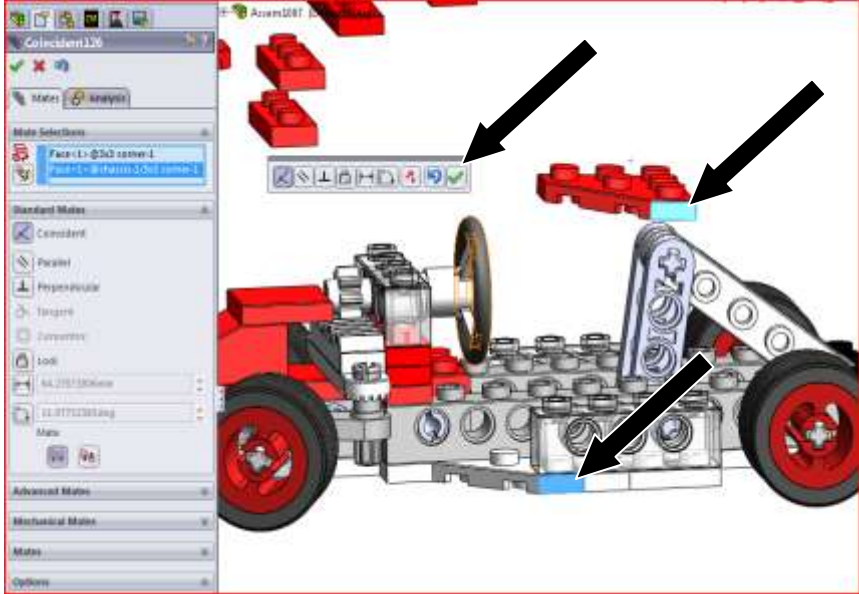


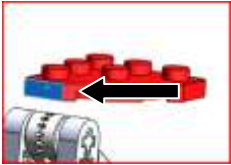
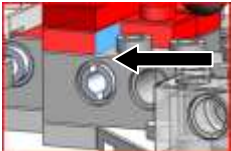

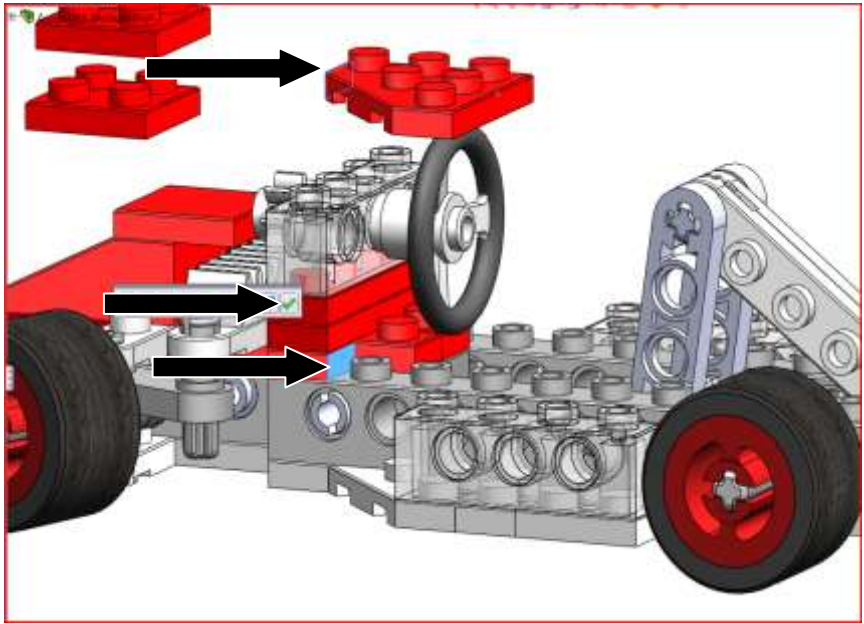

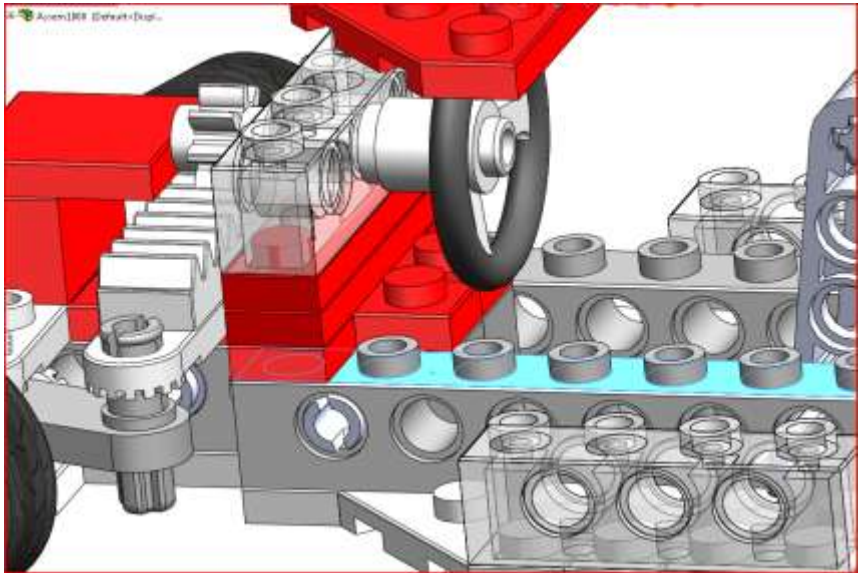

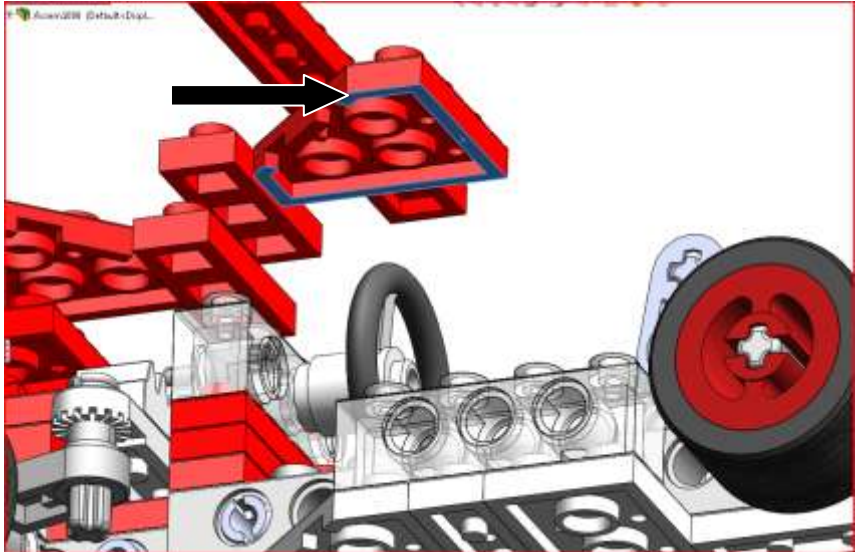
<p>145</p> <p>2. Click: </p> <p> Do the same by yourself with the next two parts.</p>	
<p>146</p> <div data-bbox="272 797 461 920">  </div> <div data-bbox="272 936 461 1077">  </div> <p>Refer to the example and use your knowledge from steps: 139 through 145</p> <p>Let's save our data once again for the sake of safety! Click Save:</p> <div data-bbox="272 1317 624 1469">  </div>	

<p>147</p>	<p><b>? It worked.</b></p> <p>Next, we'll continue the mounting process.</p>  <p>1. Click:</p>  <p>Please remember this is not easy because it is crystal clear. You may need to zoom in close enough!!</p>	
<p>148</p>	 <p>1. Click:</p>  <p>The result will be as illustrated opposite!</p> <p>2. Click: </p>	
<p>149</p>	 <p>1. Click:</p> <p>2. Using the scroll wheel, zoom out and turn on the model again. The image below is displayed.</p>	


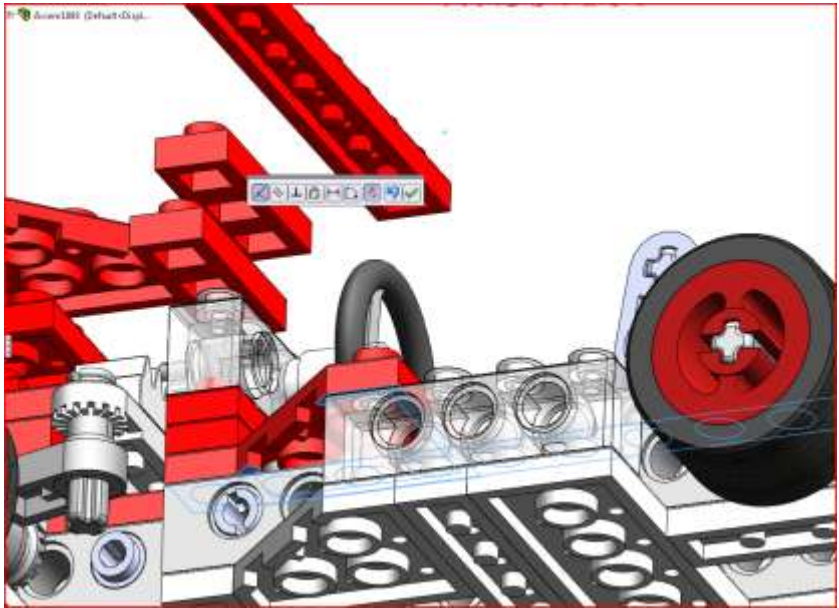
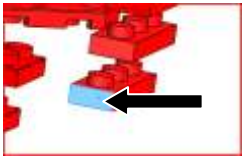
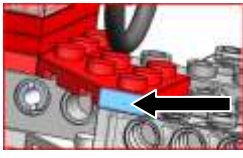

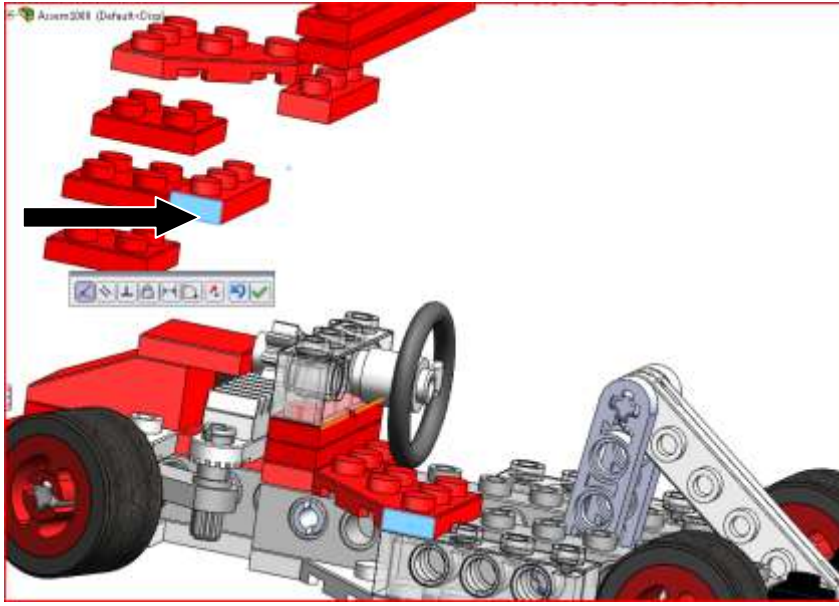
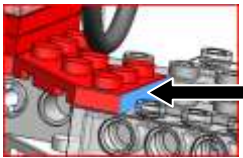
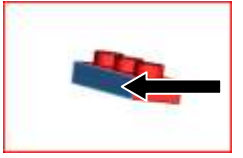
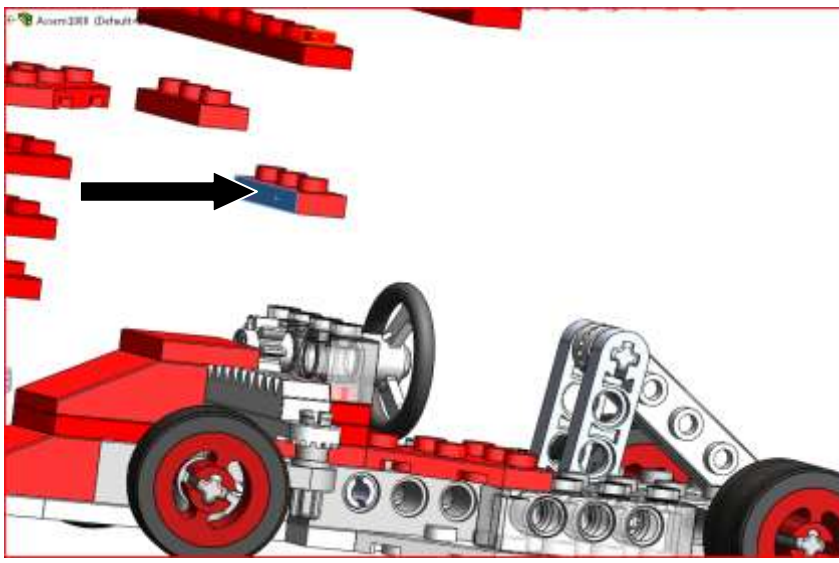
<p><b>150</b></p> <p>1. Click:</p>  <p>2. Click: </p> <p>3. Close the <b>Mate</b> function:</p> 	
<p><b>151</b></p>  The result will be as illustrated opposite! <p>Let's save our data once again for the sake of safety! Click Save:</p> 	
<p><b>152</b></p> <p>We now return to the warehouse, for new parts.</p> <p>1. Click: </p> <p>2. Click: </p> <p>3. We're looking for:</p> <p>2x  2x </p> <p>3x  2x </p>	




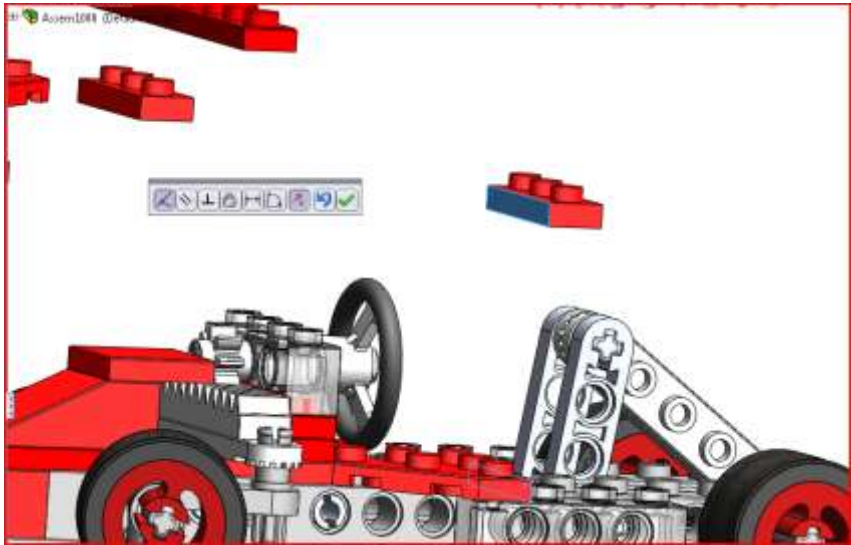

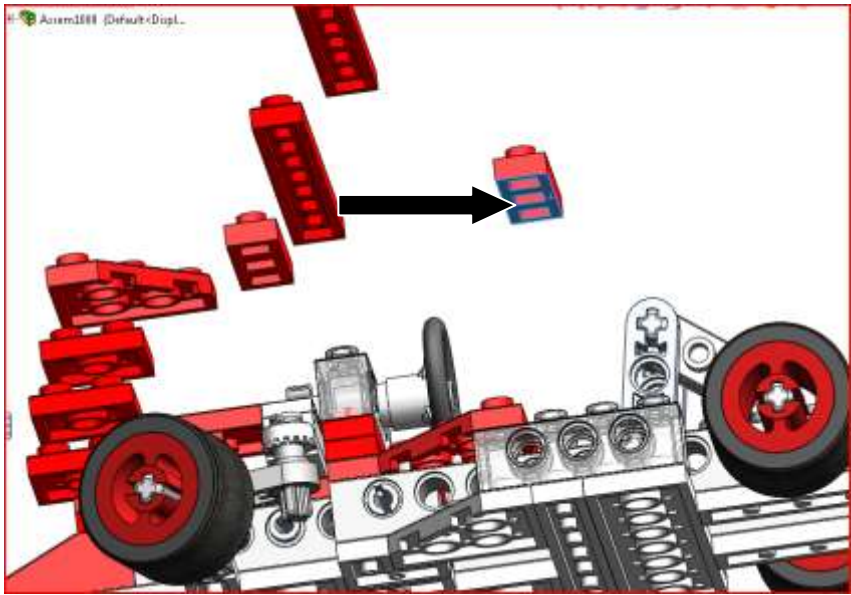

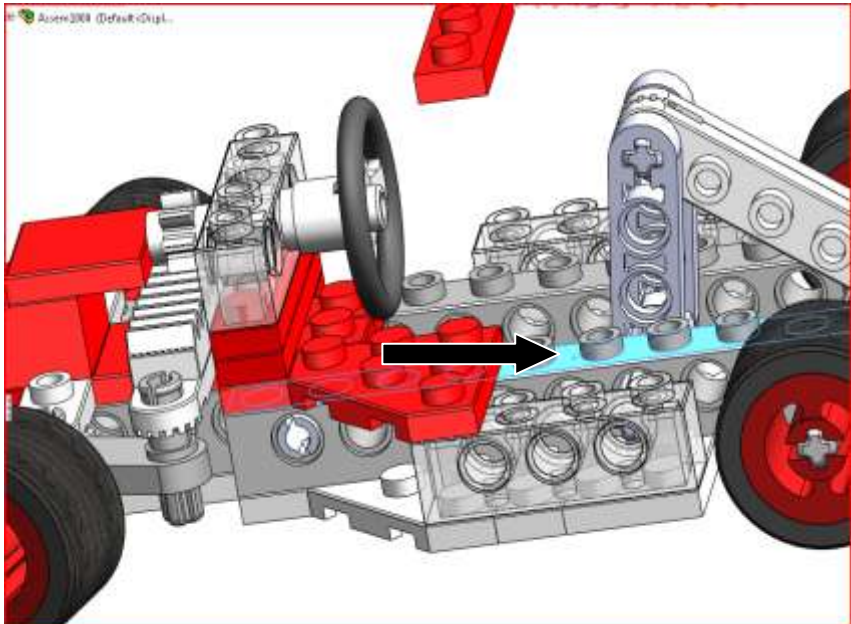
<p><b>153</b></p> <p><b>1.</b> Using the left mouse button, click:</p>  <p>Hold the button down and drag the part to!</p> <p><b>2.</b> See the example opposite!!</p>	
<p><b>154</b></p> <p><b>1.</b> Using the right mouse button, click:</p>  <p>Hold the button down and rotate the part to!</p> <p><b>2.</b> See the example opposite!!</p>	
<p><b>155</b></p> <p>We're going to mount more things!</p> <p><b>1.</b> Click: </p> <p><b>2.</b> Click: </p> <p><b>3.</b> Click: </p> <p><b>4.</b> Click OK: </p>	


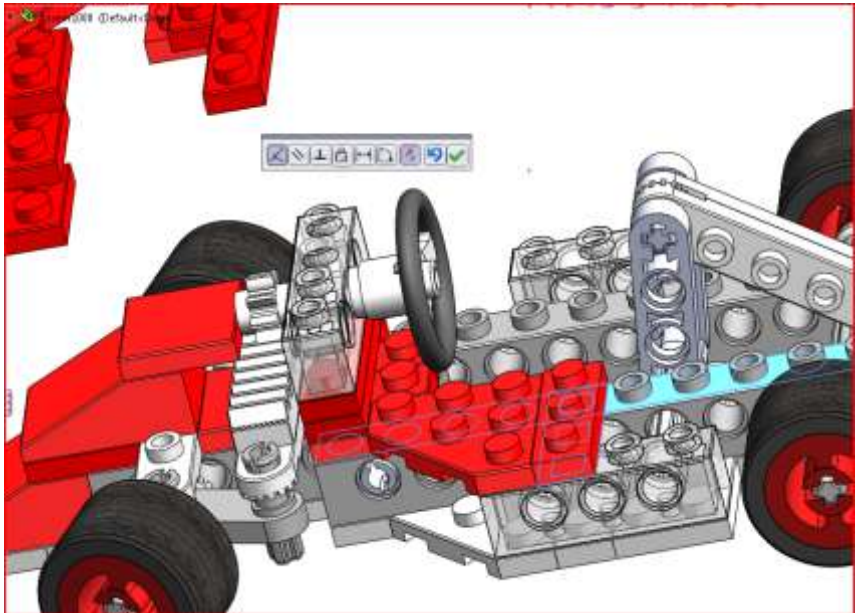

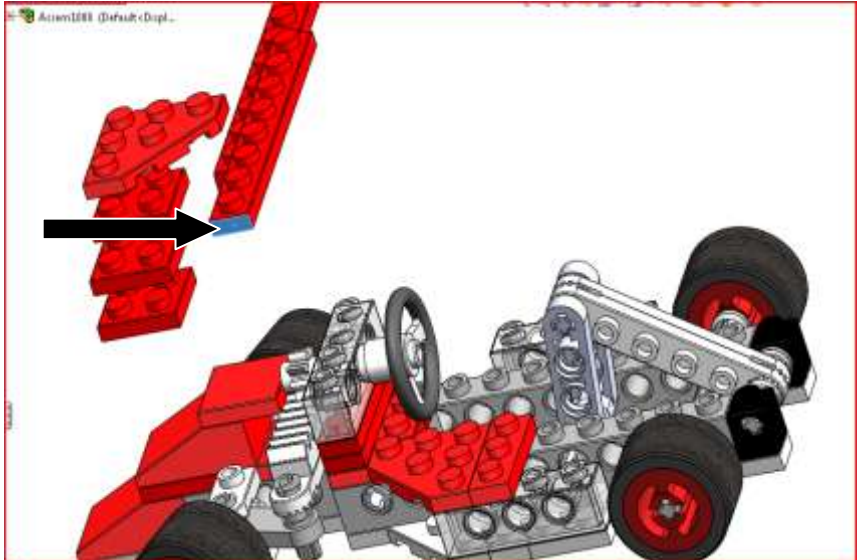
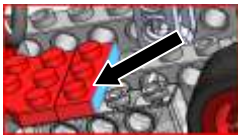

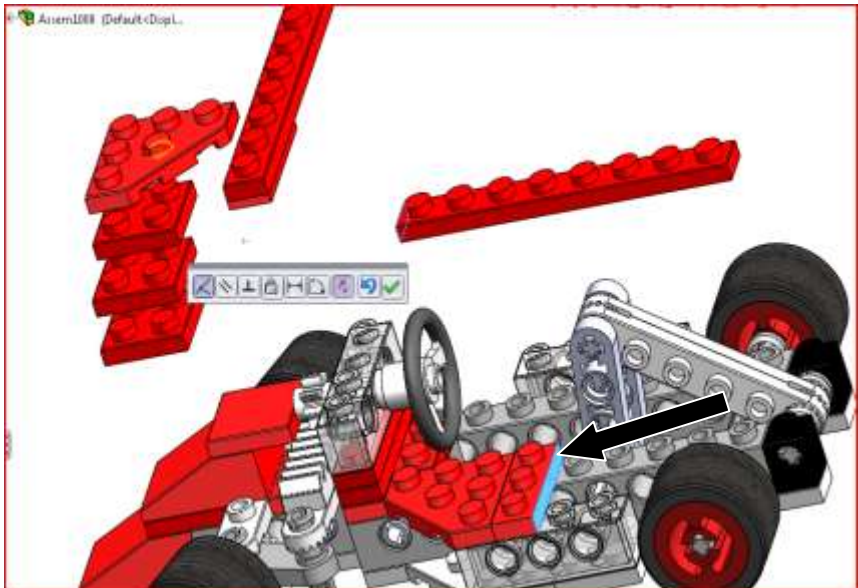
<p>156</p> <p>1. Click: </p> <p>2. Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p>3. Click: </p> <p>4. Click OK: </p>	
<p>157</p> <p>1. Click: </p>	
<p>158</p> <p>1. Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p>2. Click: </p>	




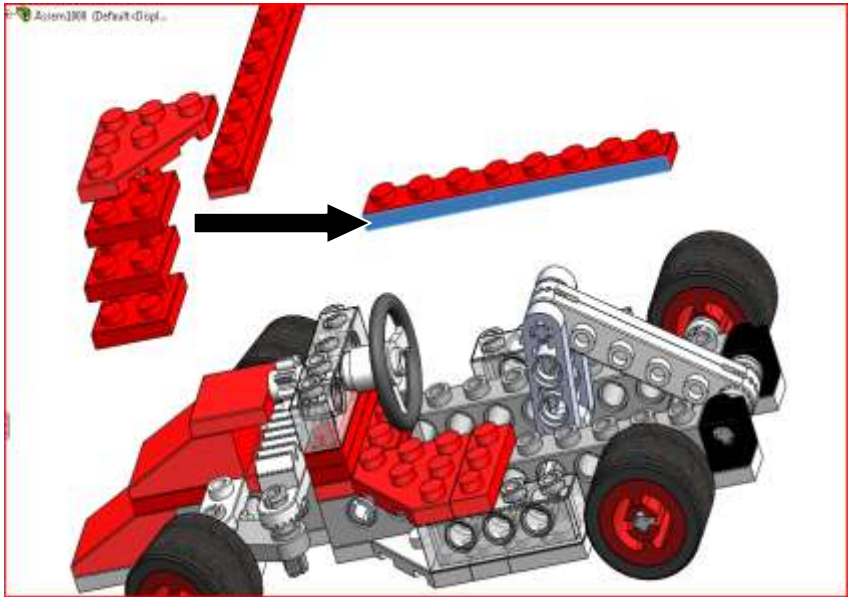


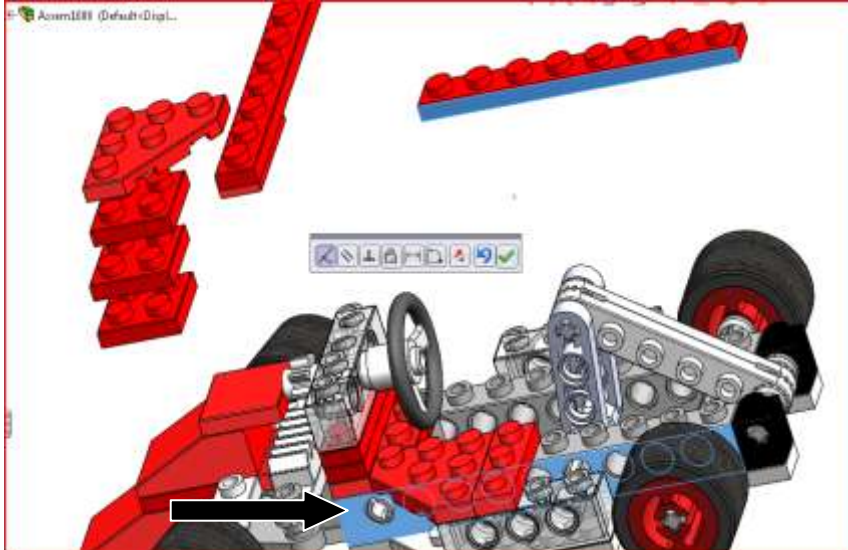

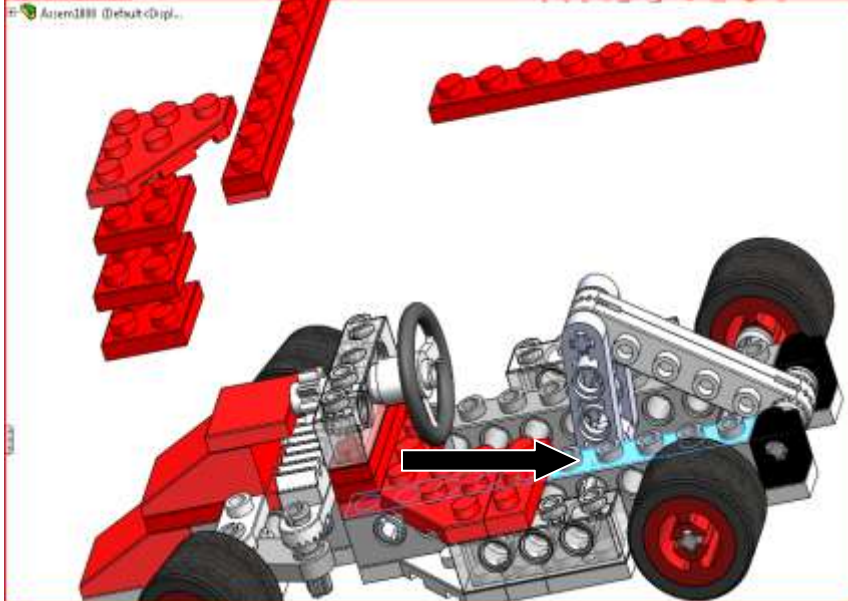
<p>159</p> <p>3. Click: </p>	
<p>160</p> <p>1. Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p>2. Click: </p> <p>3. Click: </p> <p>4. Click: </p>	
<p>161</p> <p>1. Click: </p> <p>2. Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p>3. Click: </p>	




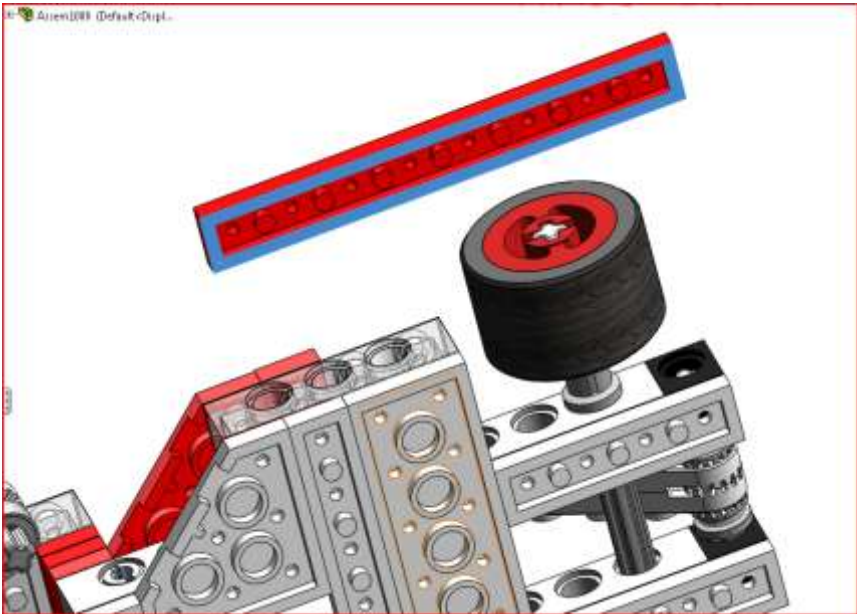


<p><b>162</b></p> <p><b>1. Click:</b> </p>	
<p><b>163</b></p> <p><b>1.</b> Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p><b>2. Click:</b> </p>	
<p><b>164</b></p> <p><b>1.</b> Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p><b>2. Click:</b> </p>	

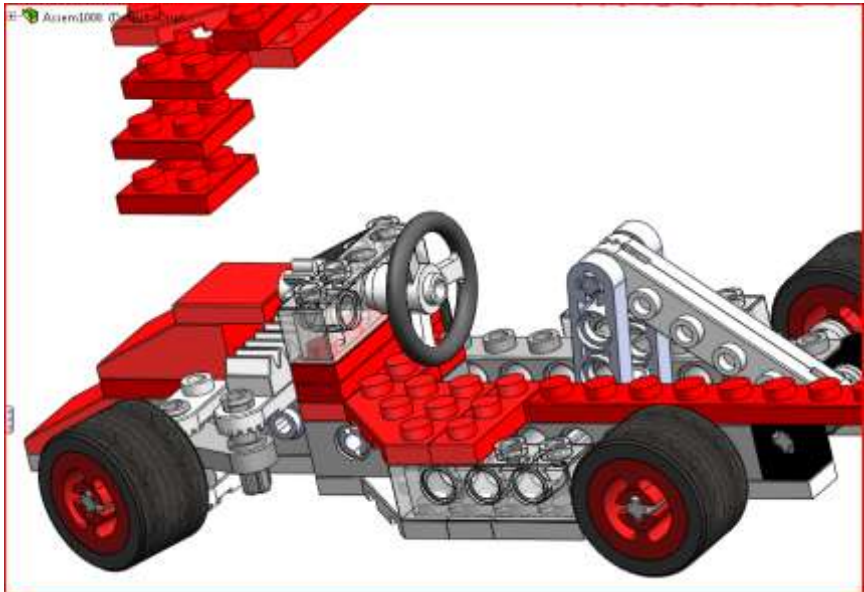



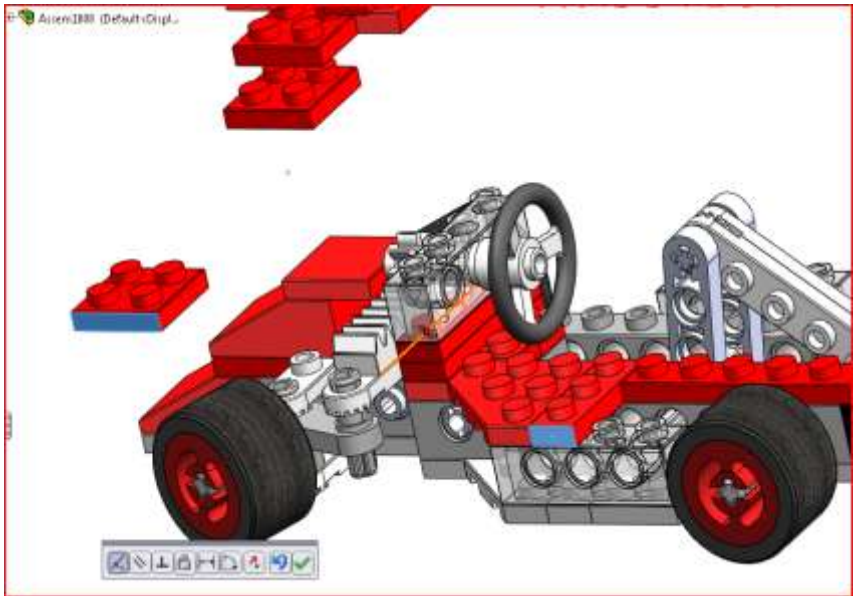
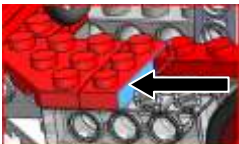


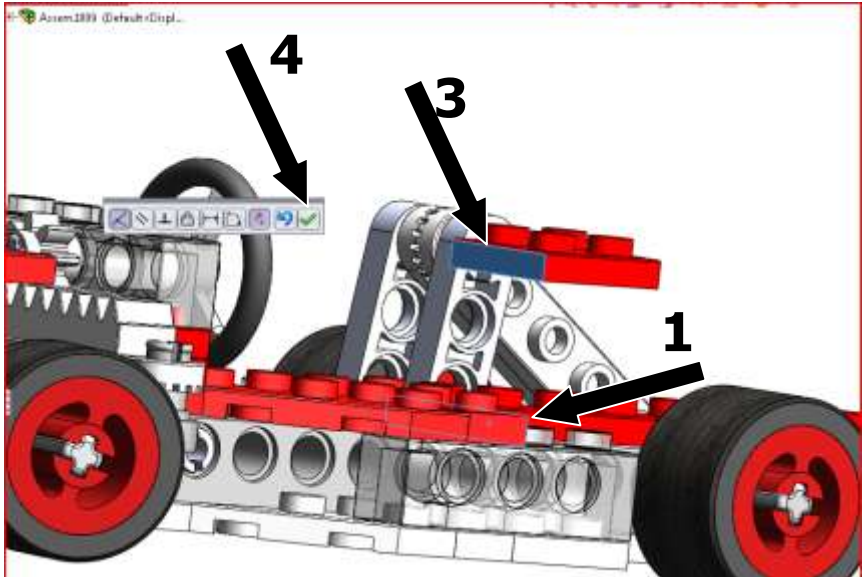
<p><b>165</b></p> <p>1. Click: </p>	
<p><b>166</b></p> <p>1. Click: </p>	
<p><b>167</b></p> <p>1. Click: </p> <p>2. Click: </p>	

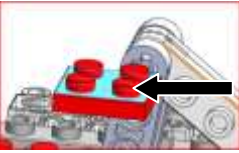
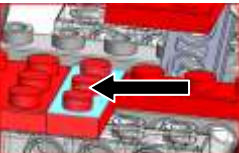

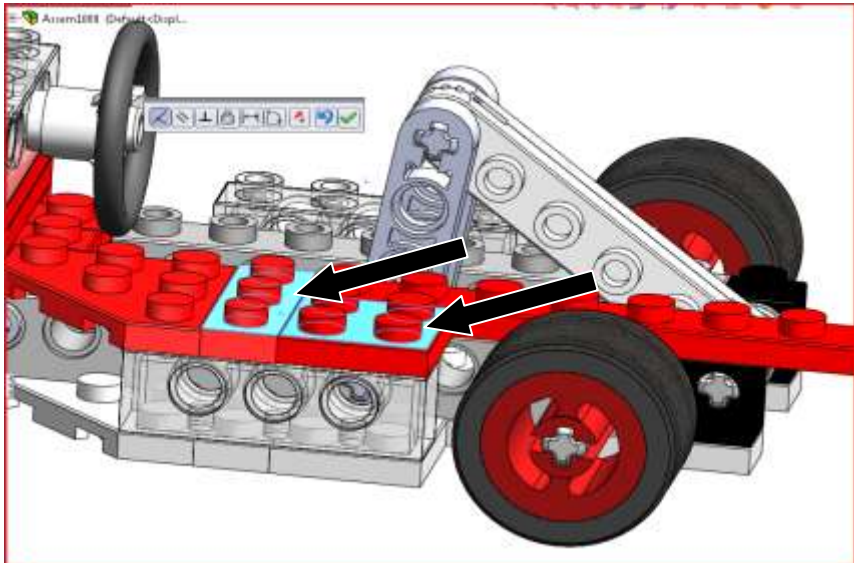

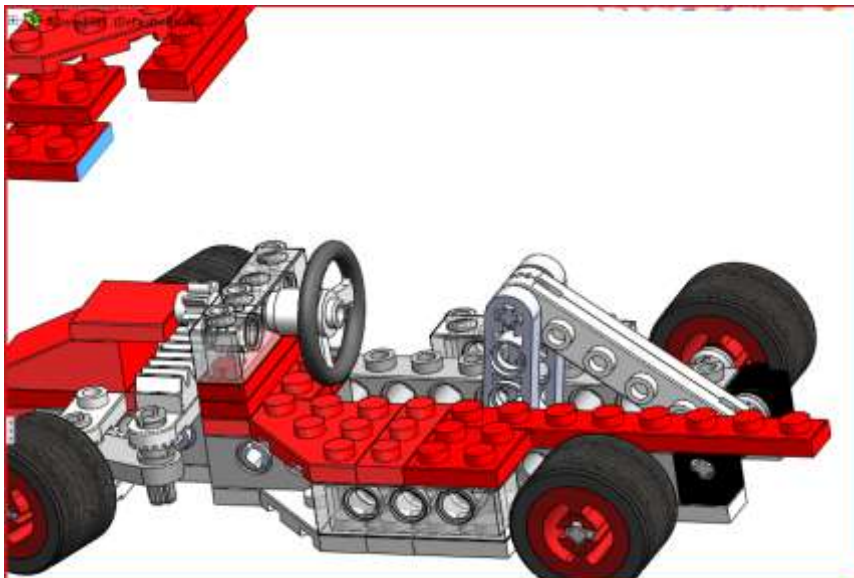


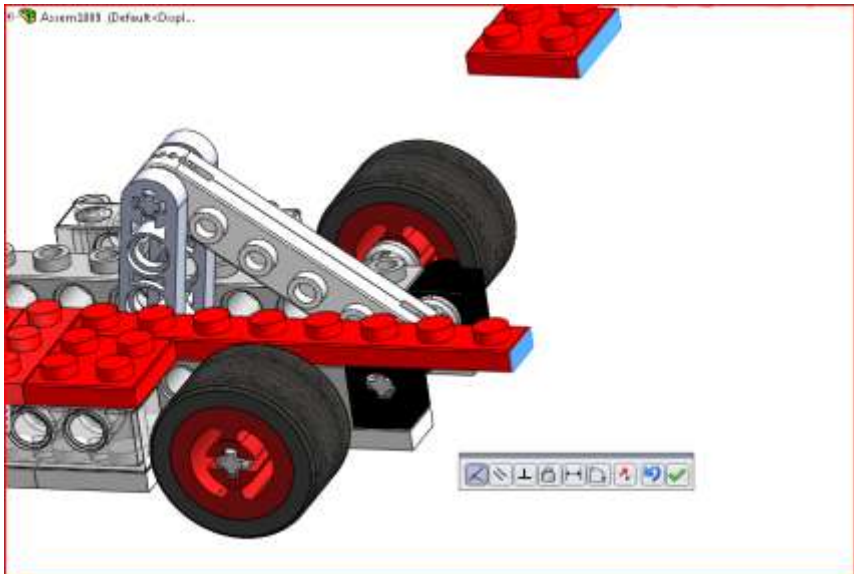


<p><b>168</b></p> <p>1. Click:</p>		
<p><b>169</b></p> <p>1. Click:</p> <p>2. Click:</p>	 	
<p><b>170</b></p> <p>1. Click:</p>		


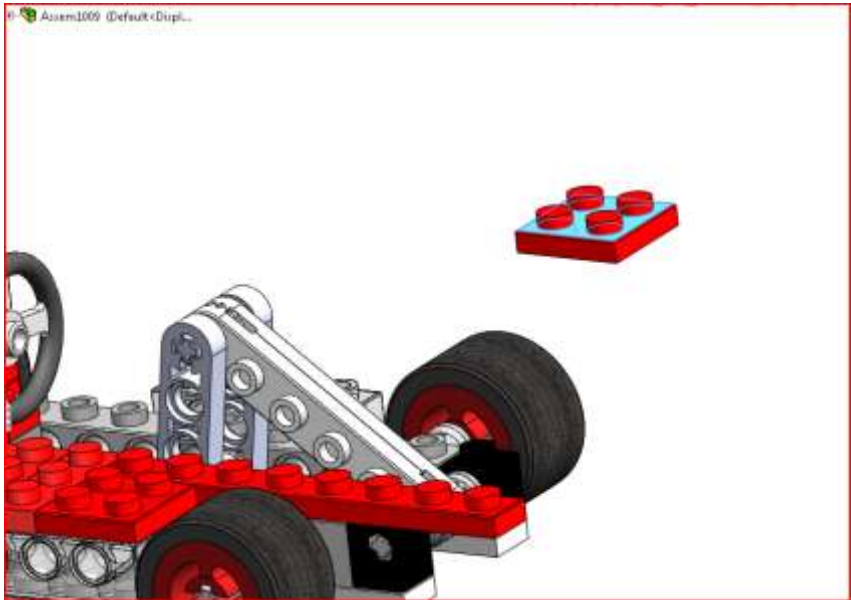

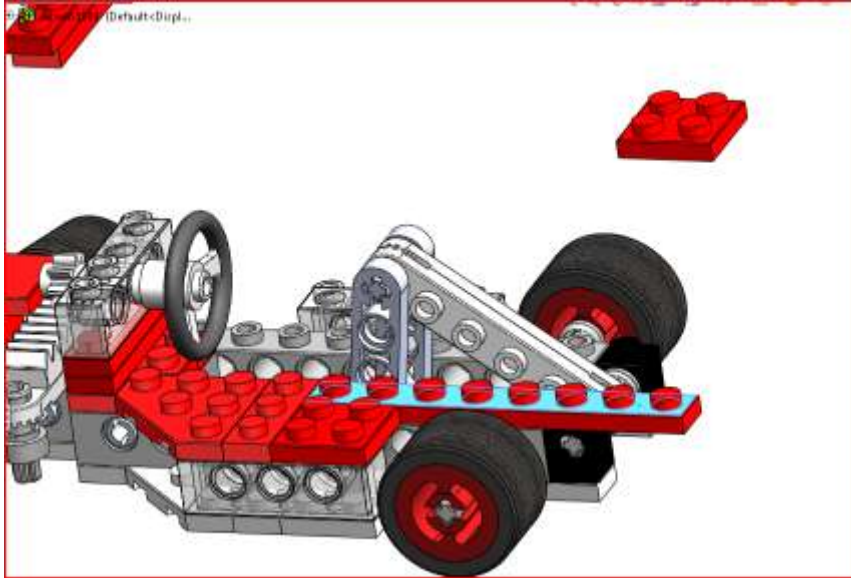



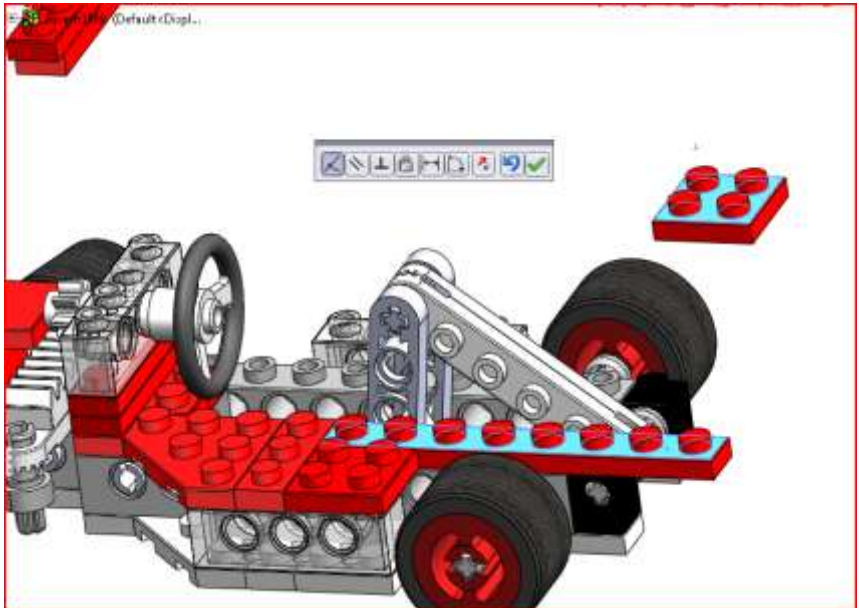

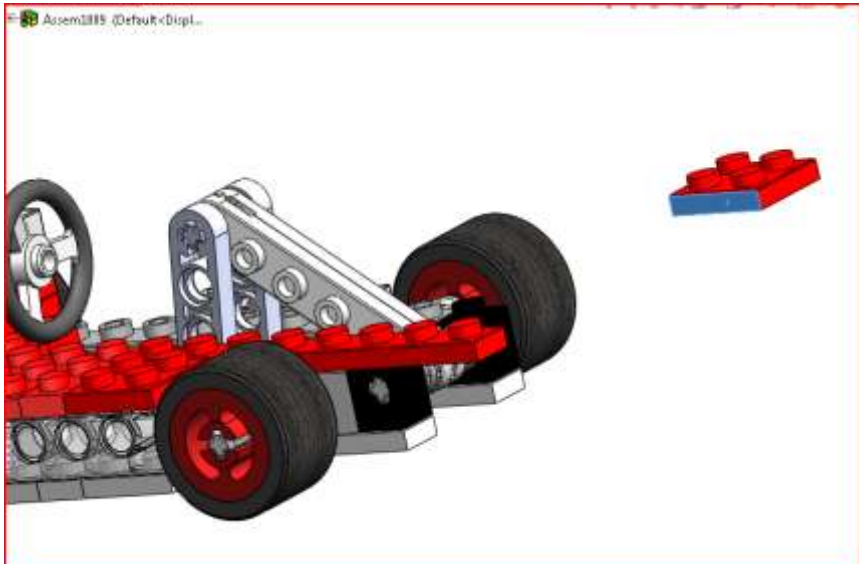

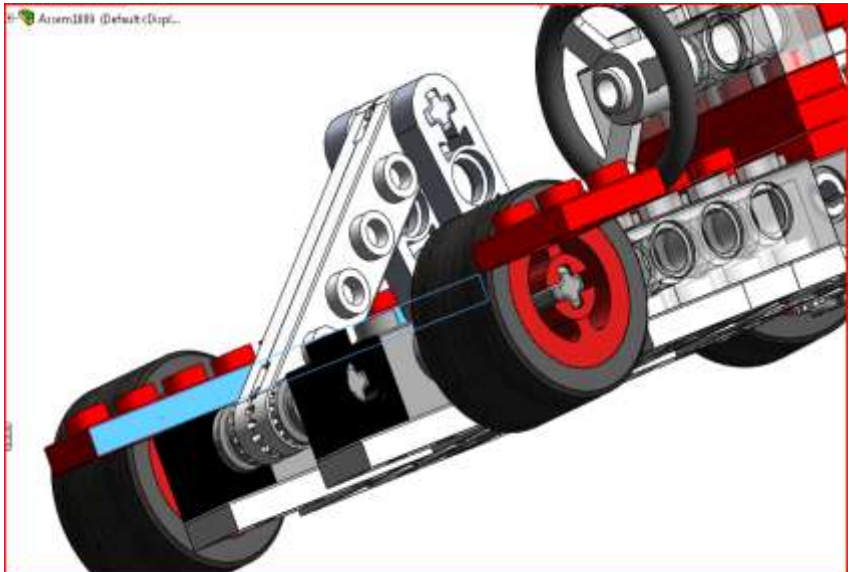
<p><b>171</b></p>	<p><b>1.</b> Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p><b>2.</b> Click: </p>	
<p><b>172</b></p>	<p><b>1.</b> Click: </p>	


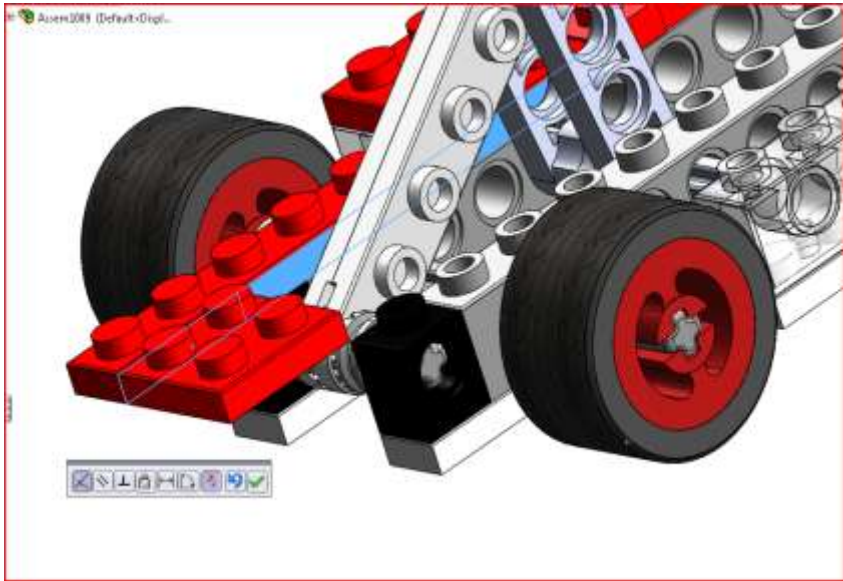

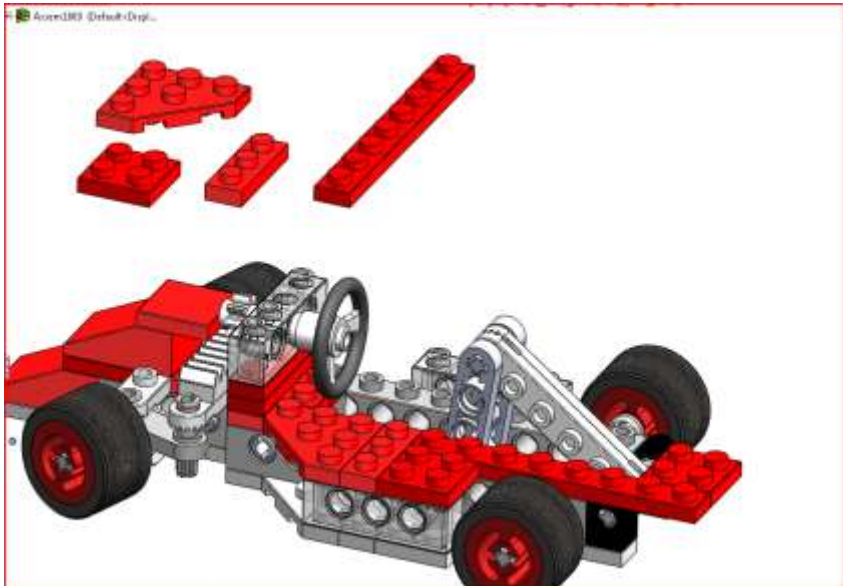


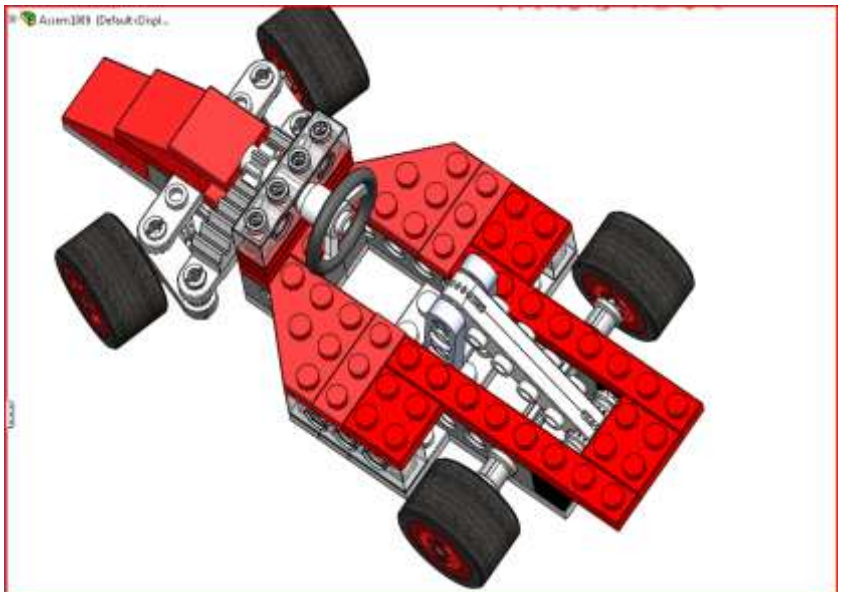
<p><b>173</b></p> <p><b>1.</b> Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p>	
<p><b>174</b></p> <p><b>1.</b> Click: </p> <p><b>2.</b> Click: </p> <p><b>3.</b> Click: </p>	
<p><b>175</b></p> <p><b>1.</b> Click: </p> <p><b>2.</b> Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p><b>3.</b> Click: </p> <p><b>4.</b> Click: </p>	

<p><b>176</b></p> <p><b>1.</b> Using the scroll wheel, zoom out on the model. The image opposite is displayed.</p> <p><b>2.</b> Click: </p> <p><b>3.</b> Click: </p> <p><b>4.</b> Click: </p>	
<p><b>177</b></p> <p><b>1.</b> Click: </p>	
<p><b>178</b></p> <p><b>1.</b> Click: </p> <p><b>2.</b> Click: </p>	

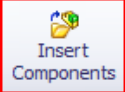
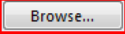
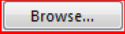
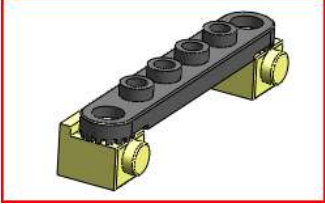
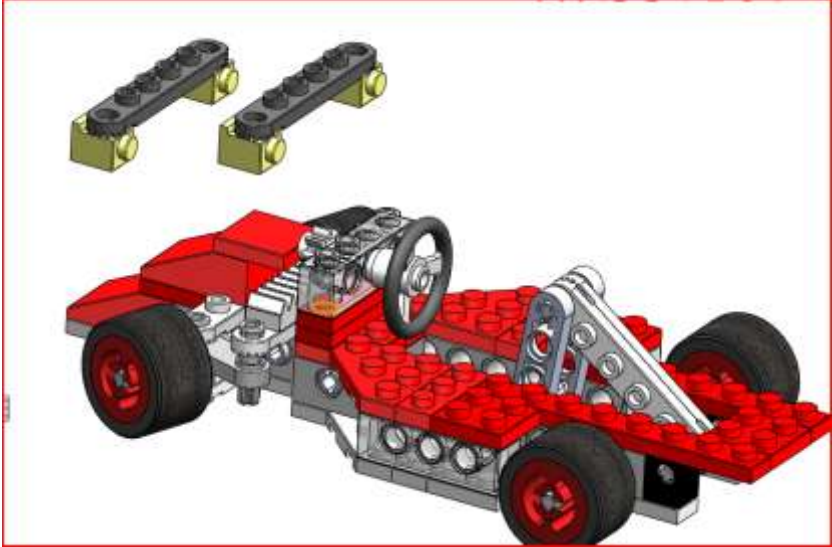
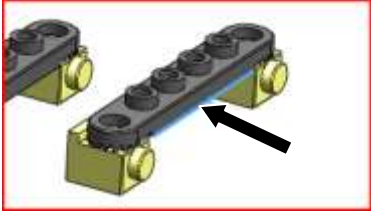
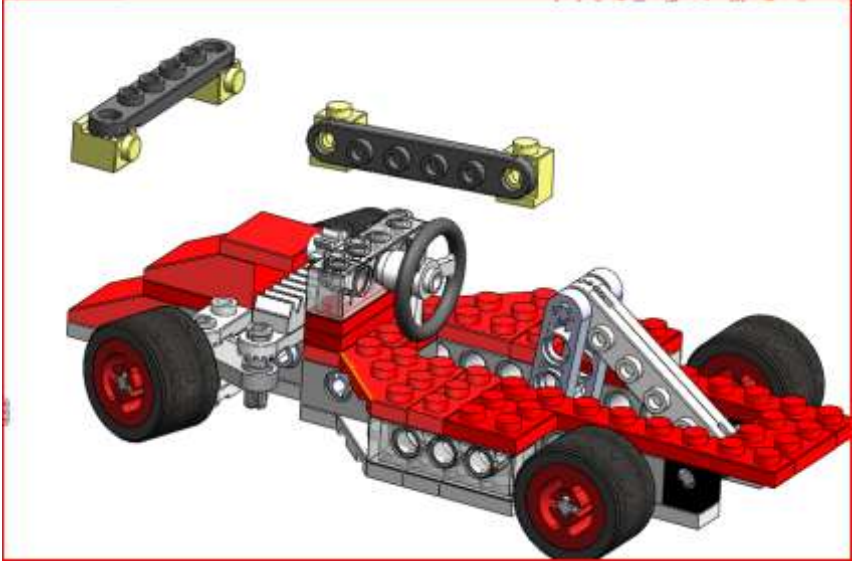
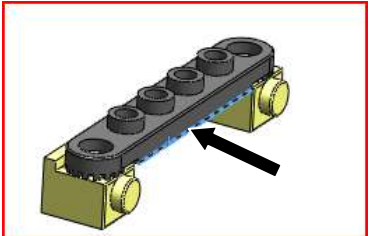
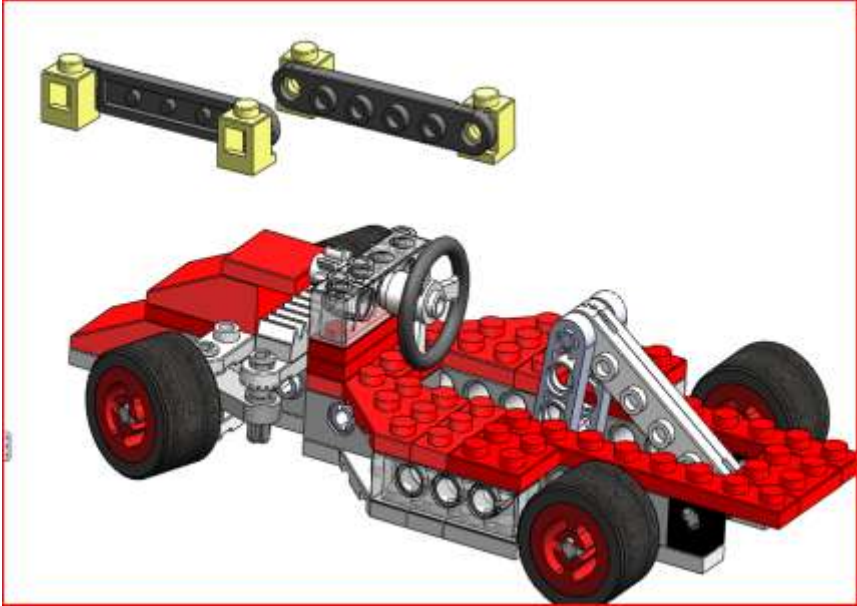


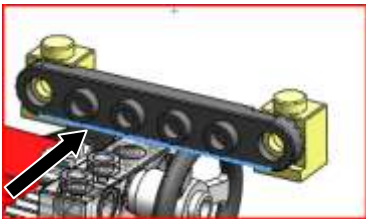
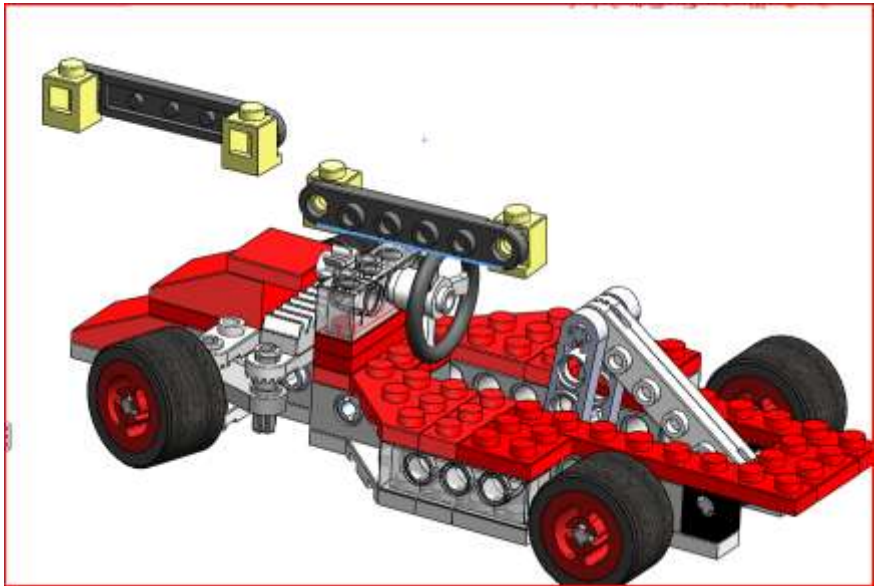
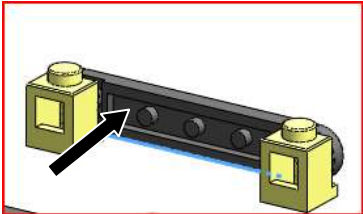
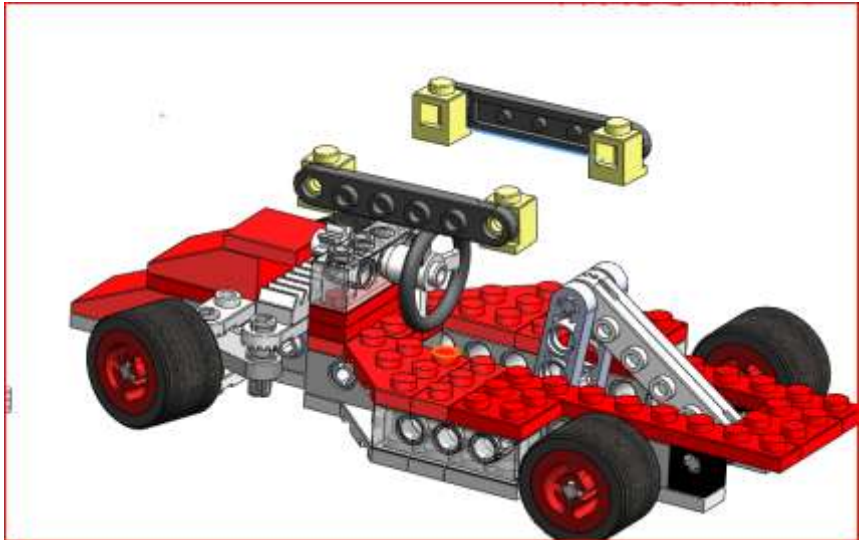

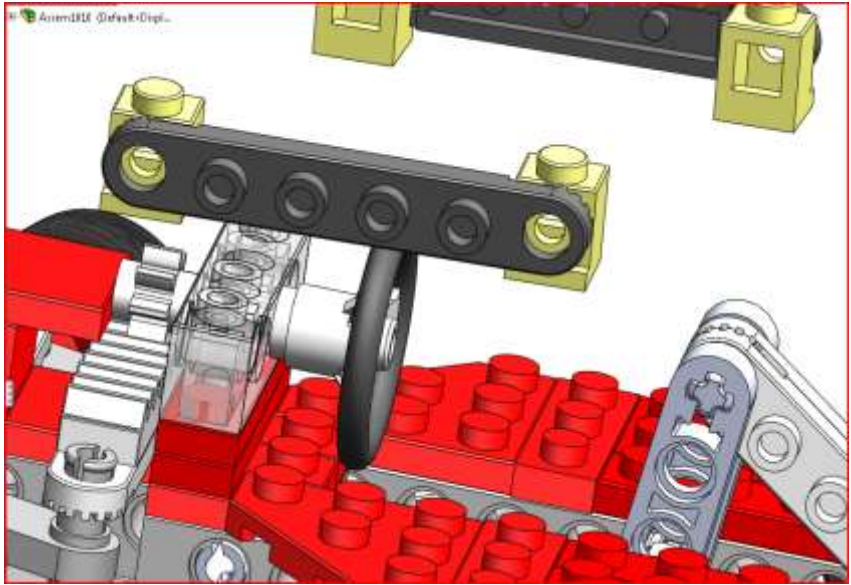
<p><b>179</b></p>	<p><b>1. Click:</b></p> 	
<p><b>180</b></p>	<p><b>1. Click:</b></p> 	

<p><b>181</b></p> <p>1. Click: </p>	
<p><b>182</b></p> <p>1. Click: </p>	
<p><b>183</b></p> <p>1. Using the scroll wheel, zoom out and turn on the model again. The image opposite is displayed.</p> <p>2. Click: </p>	


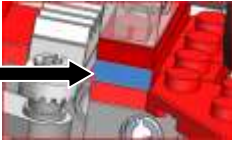

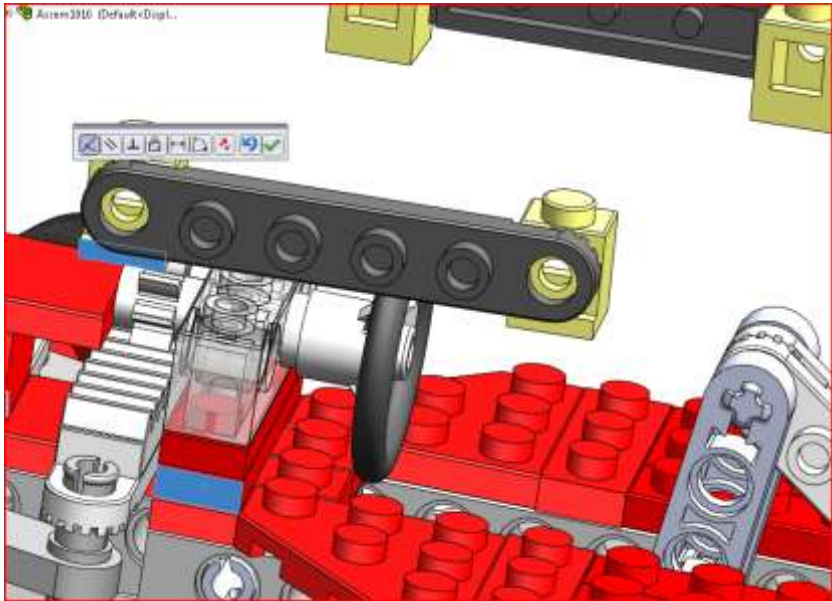



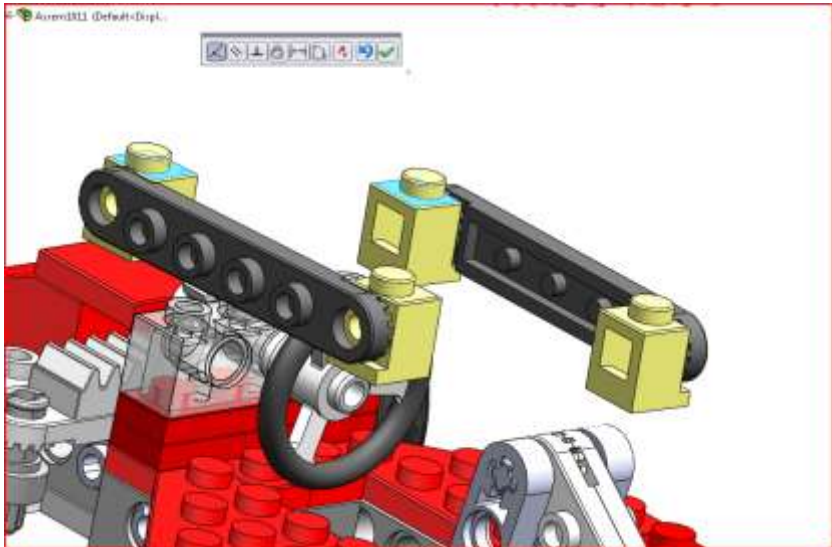



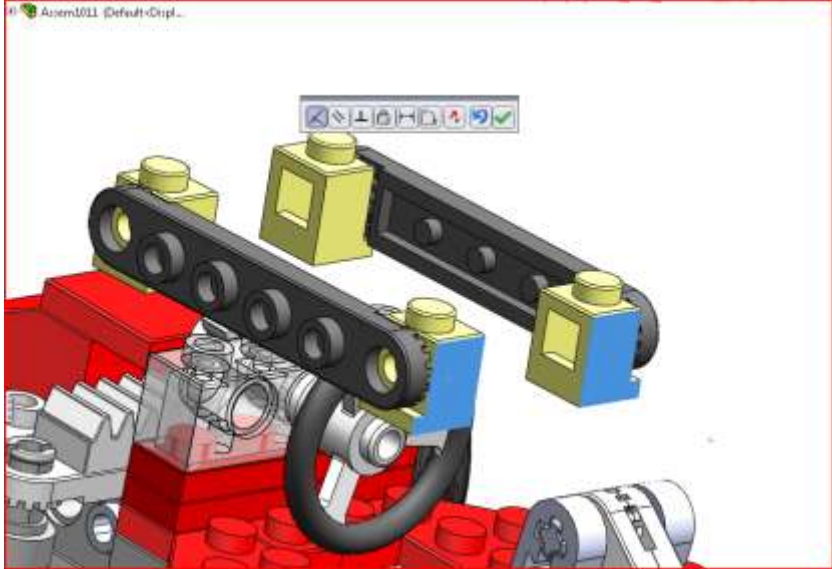
<p><b>184</b></p> <p>1. Click OK: </p>	
<p><b>185</b></p> <p> Do the same by yourself with the next two parts.</p> <p><b>You don't remember how?</b> Use the technique from steps: <b>153 - through - 176</b></p>	
<p><b>186</b></p> <p> The result must be as in the example illustrated opposite!</p> <p>Let's save our data once again for the sake of safety!</p> <p>Click Save:</p> 	





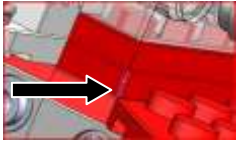

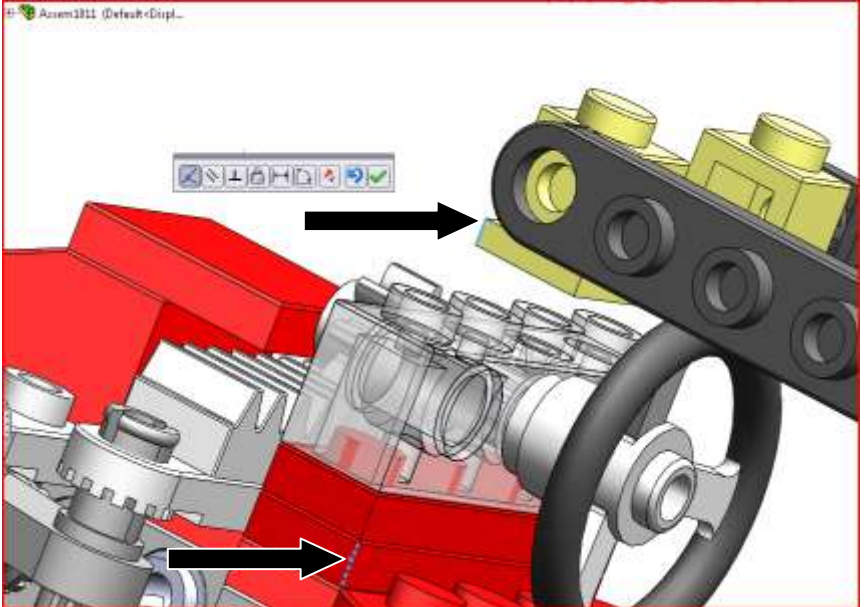


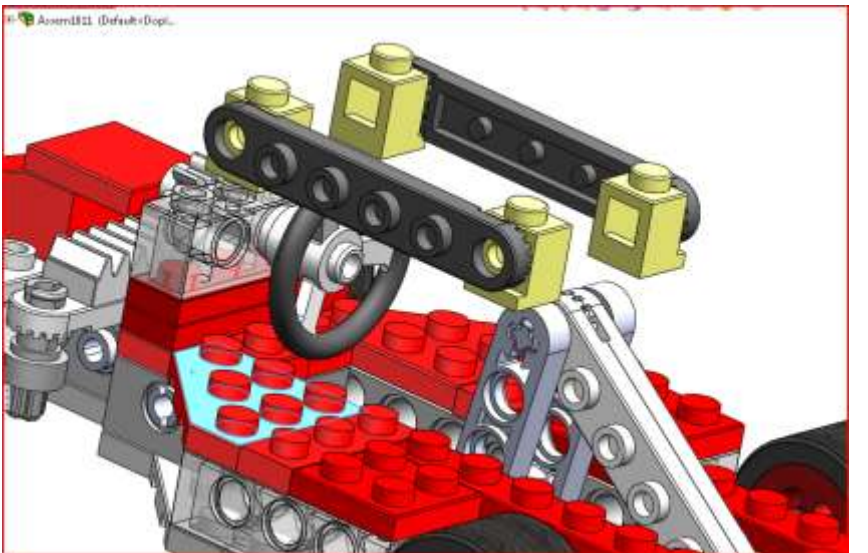

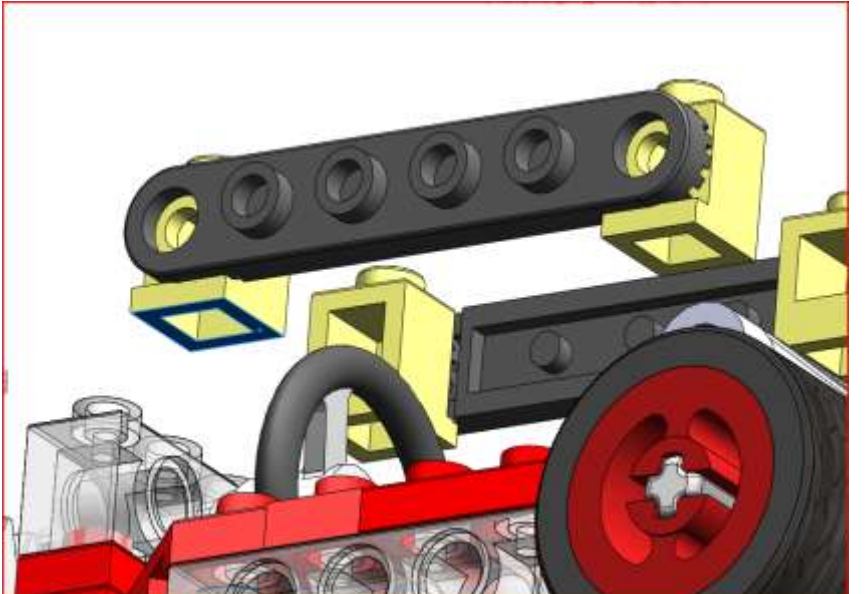
<p><b>187</b></p> <p>We now return to the warehouse, for new parts.</p> <p></p> <p>1. Click: </p> <p>2. Click: </p> <p>3. We're looking for:</p> <p></p> <p>2x</p> <p>cage.sldasm</p>	
<p><b>188</b></p> <p><b>We're going to mount more things!</b></p> <p>1. Click the edge with the right mouse button.</p> <p></p> <p>Hold the button down and rotate the part such that it will be positioned as illustrated here!</p> <p>2. See the example opposite!!</p>	
<p><b>189</b></p> <p>1. Repeat for the second part!</p> <p>2. Click the edge with the right mouse button.</p> <p></p> <p>Hold the button down and rotate the part such that it will be positioned as illustrated here!</p> <p>3. See the example opposite!!</p>	


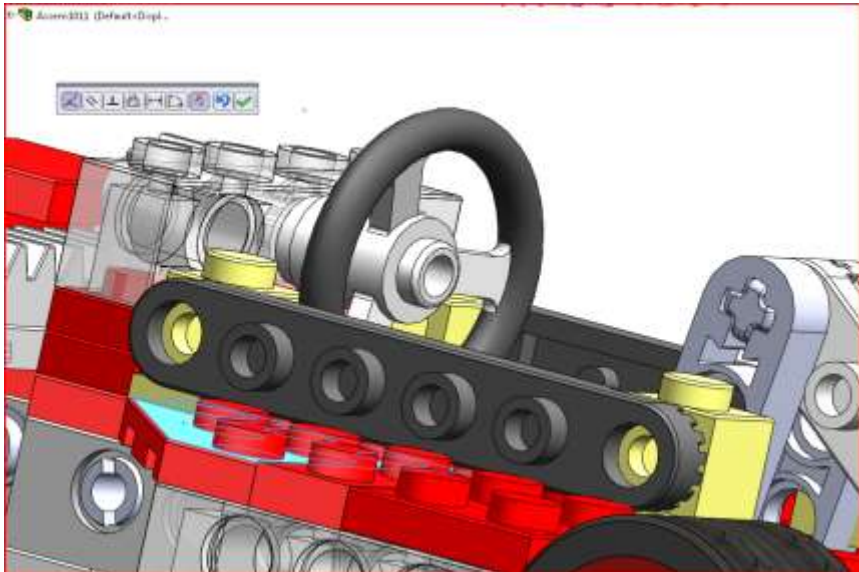



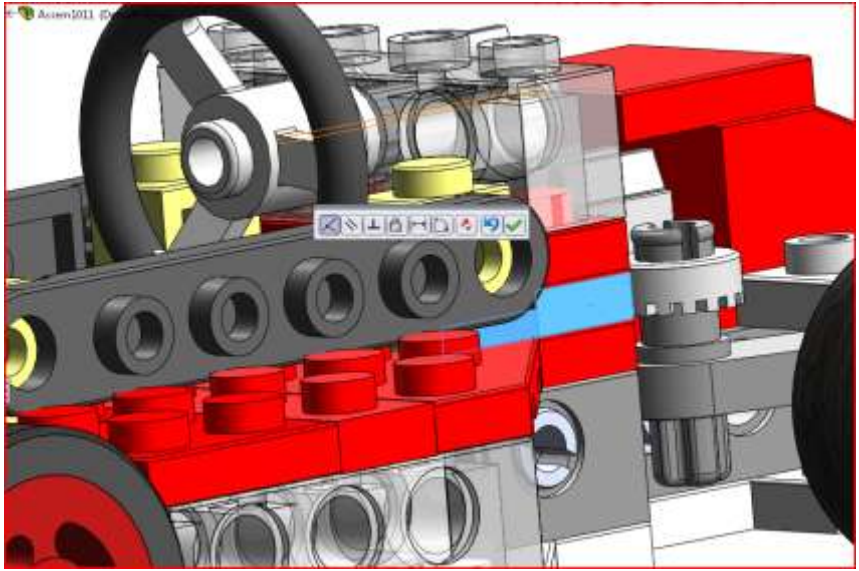

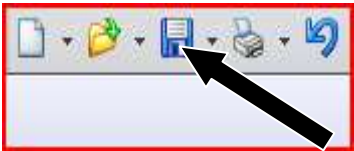
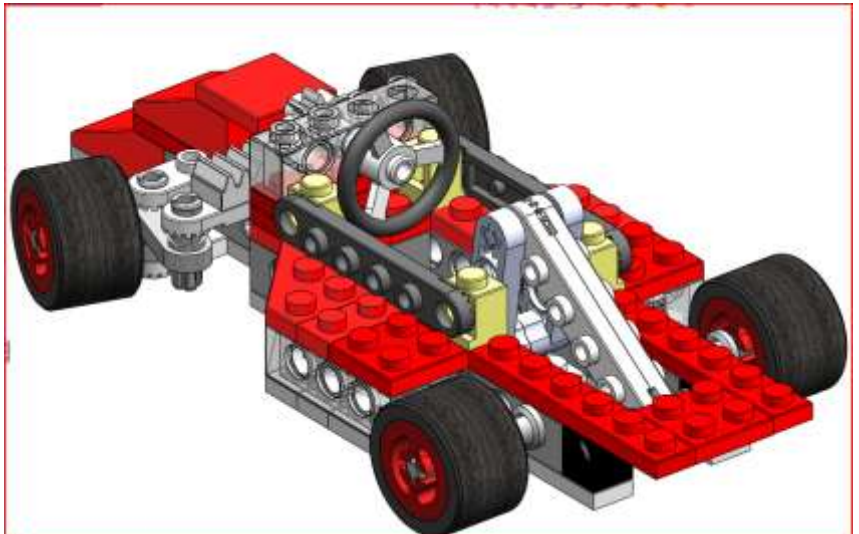
<p><b>190</b></p>	<p><b>1.</b> Click the edge with the left mouse button.</p>  <p>Hold the button down and shift the part such that it will be positioned as illustrated here!</p> <p><b>2.</b> See the example opposite!!</p>	
<p><b>191</b></p>	<p><b>1.</b> Using the left mouse button, click the edge of the second part!.</p>  <p>Hold the button down and shift the part such that it will be positioned as illustrated here!</p> <p><b>2.</b> See the example opposite!!</p>	
<p><b>192</b></p>	<p><b>1.</b> Using the scroll wheel, zoom in and turn the model again. The image opposite is displayed.</p>  <p><b>2.</b> Click:</p>	




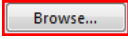
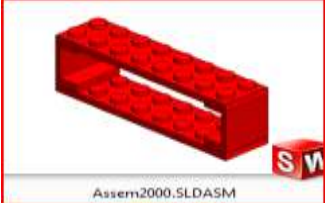
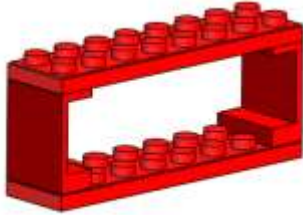
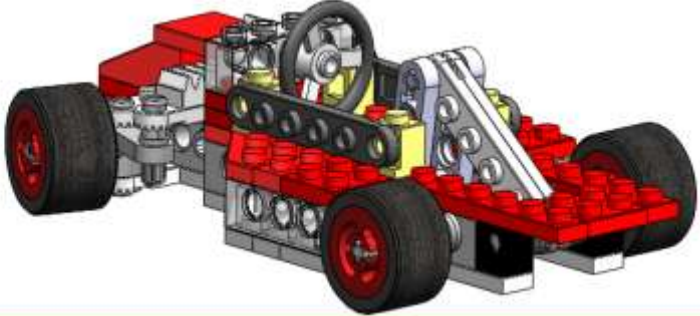

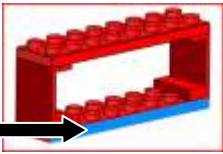
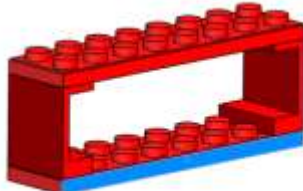
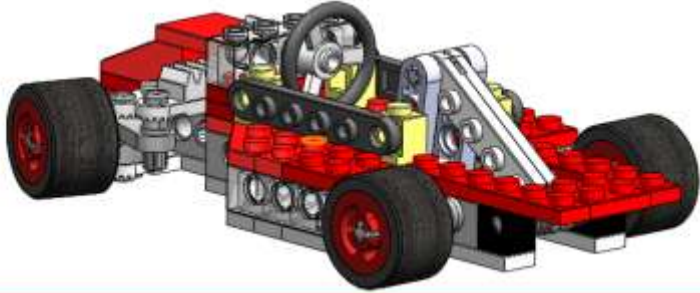
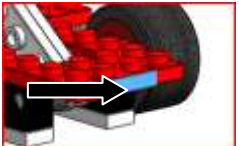

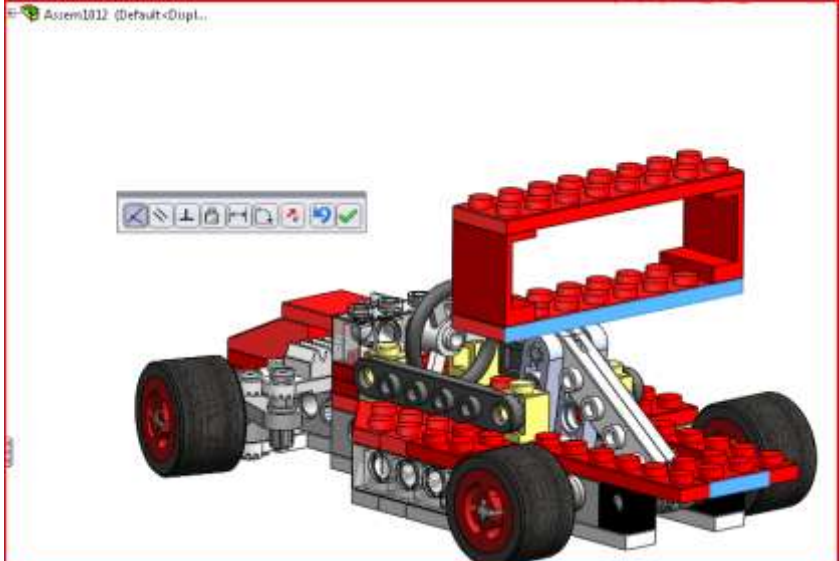
<p><b>193</b></p> <p>1. Click: </p> <p>2. Click: </p> <p>3. Click OK: </p>	
<p><b>190</b></p> <p>1. Click: </p> <p>2. Click: </p> <p>3. Click OK: </p>	
<p><b>191</b></p> <p>1. Click: </p> <p>2. Click: </p> <p>3. Click OK: </p>	





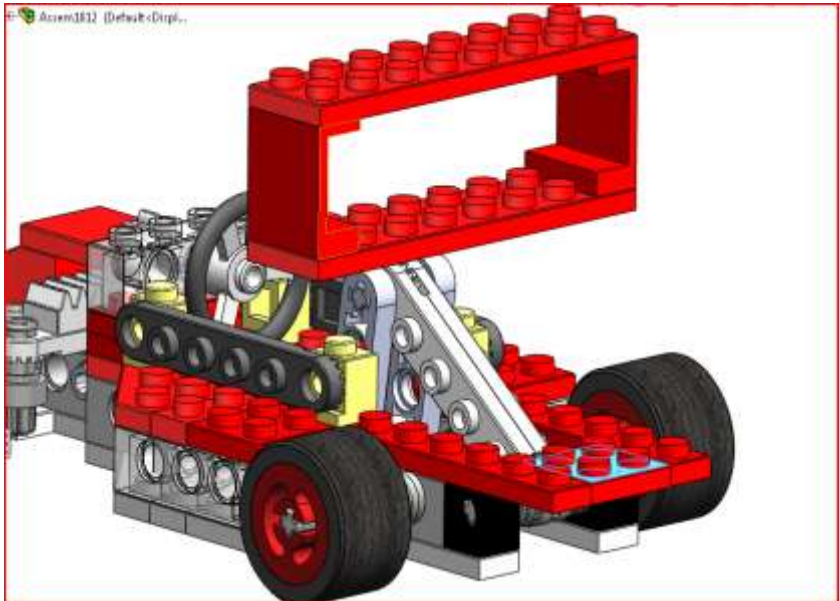
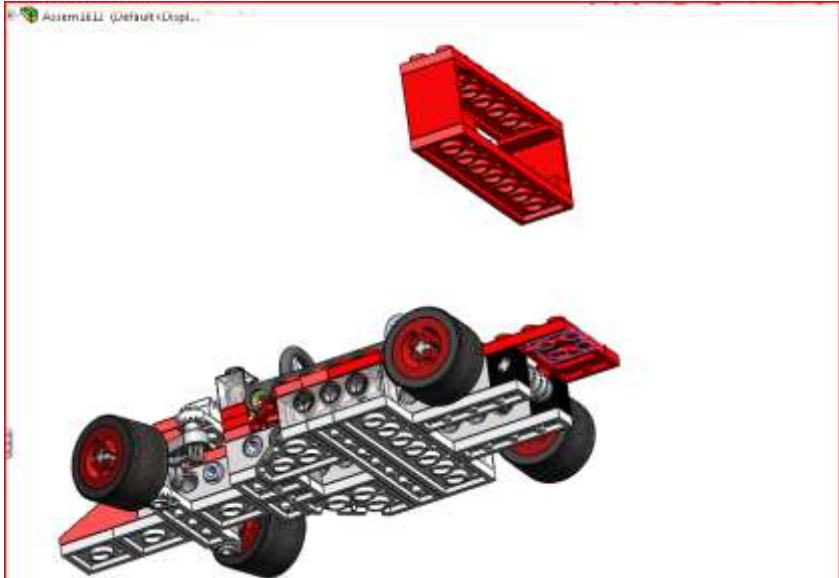



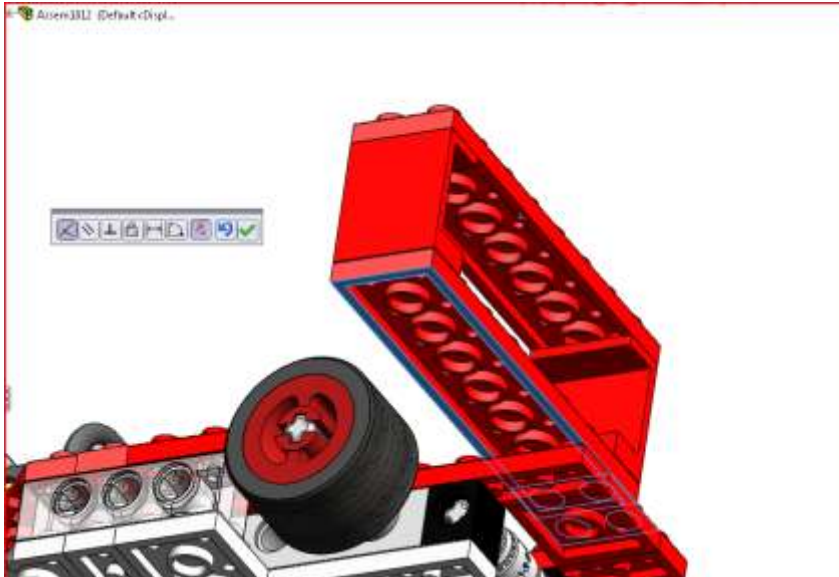
<p><b>192</b></p> <p> Zoom in!!</p> <p><b>1. Click:</b> </p> <p><b>2. Click:</b> </p> <p><b>ATTENTION: CLICK THE EDGE!!!!</b></p> <p><b>3. Click OK:</b> </p>	
<p><b>193</b></p> <p> Zoom out!!</p> <p><b>1. Click:</b> </p>	
<p><b>194</b></p> <p><b>1. Using the scroll wheel, rotate the model. See the image opposite.</b></p> <p><b>2. Click:</b> </p>	


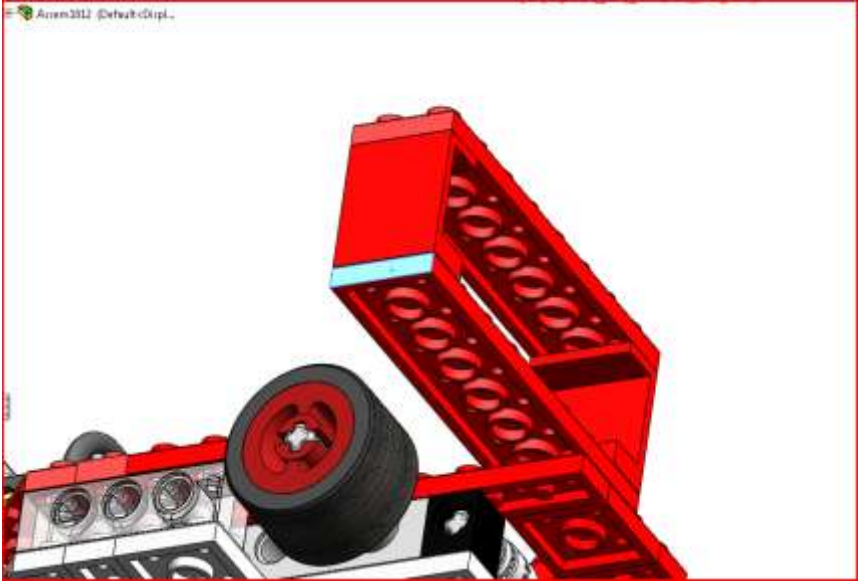

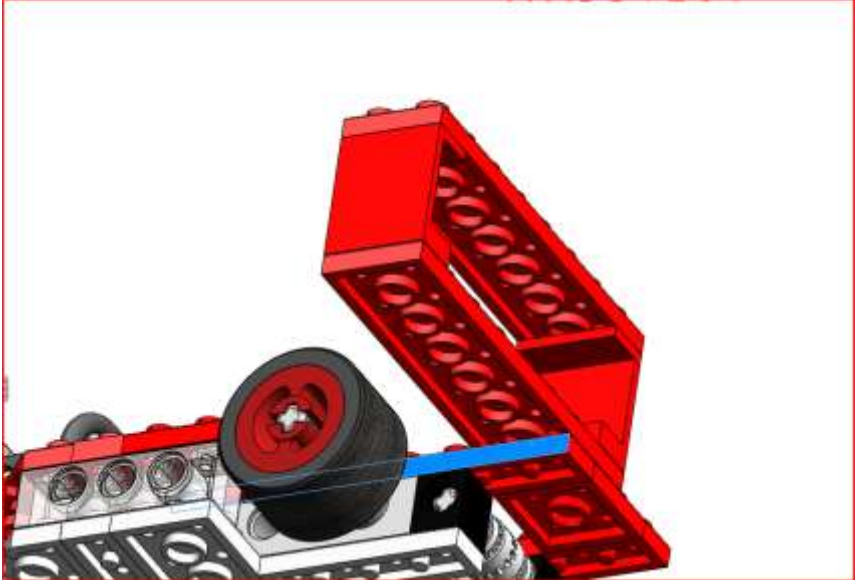

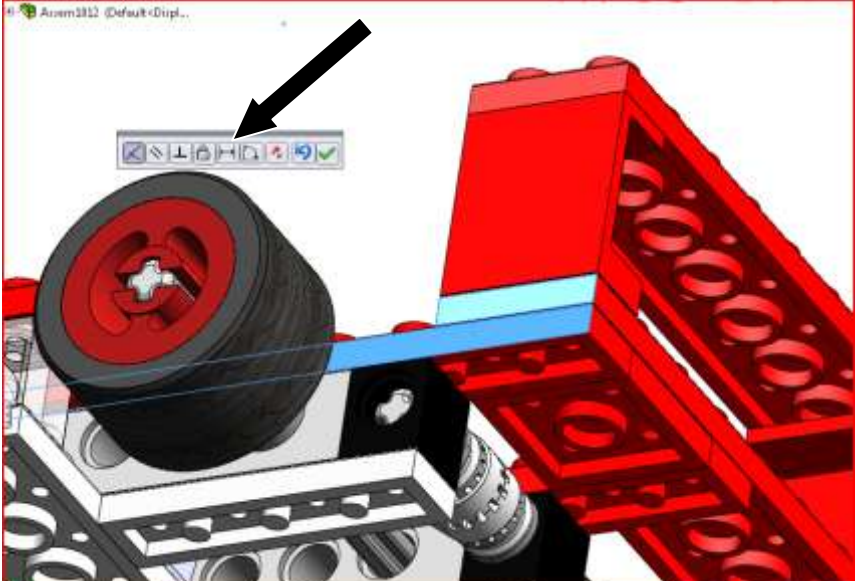
<p><b>195</b></p> <p>1. Click OK: </p>	
<p><b>196</b></p> <p>1. Using the scroll wheel, rotate the model. See the image opposite.</p> <p>2. Click: </p> <p>3. Click: </p> <p>4. Click OK: </p>	
<p><b>197</b></p> <p> The result must be See the example opposite!</p> <p>Let's save our data once again for the sake of safety!</p> <p>Click Save:</p> 	



<p><b>198</b></p> <p>We now return to the warehouse, for new parts.</p> <p>1. Click: </p> <p>2. Click: </p> <p>3. We're looking for:</p> <p>1x  <small>Assem2000.SLDASM</small></p>	 
<p><b>199</b></p> <p>1. Click: </p> <p>2. Click: </p>	 
<p><b>200</b></p> <p>1. Click: </p> <p>2. Click OK: </p>	



<p><b>201</b></p>  <p>Zoom in!!</p>  <p><b>1. Click:</b></p>	
<p><b>202</b></p> <p><b>1.</b> Using the scroll wheel, rotate the model. See the image opposite.</p>	
<p><b>203</b></p>  <p>Zoom in!!</p>  <p><b>1. Click:</b></p> <p><b>2. Click OK:</b> </p>	

<p>204</p>	<p>1. Click:</p> 	
<p>205</p>	<p>1. Click:</p> 	
<p>206</p>	<p>2. Click:  Distance</p>	

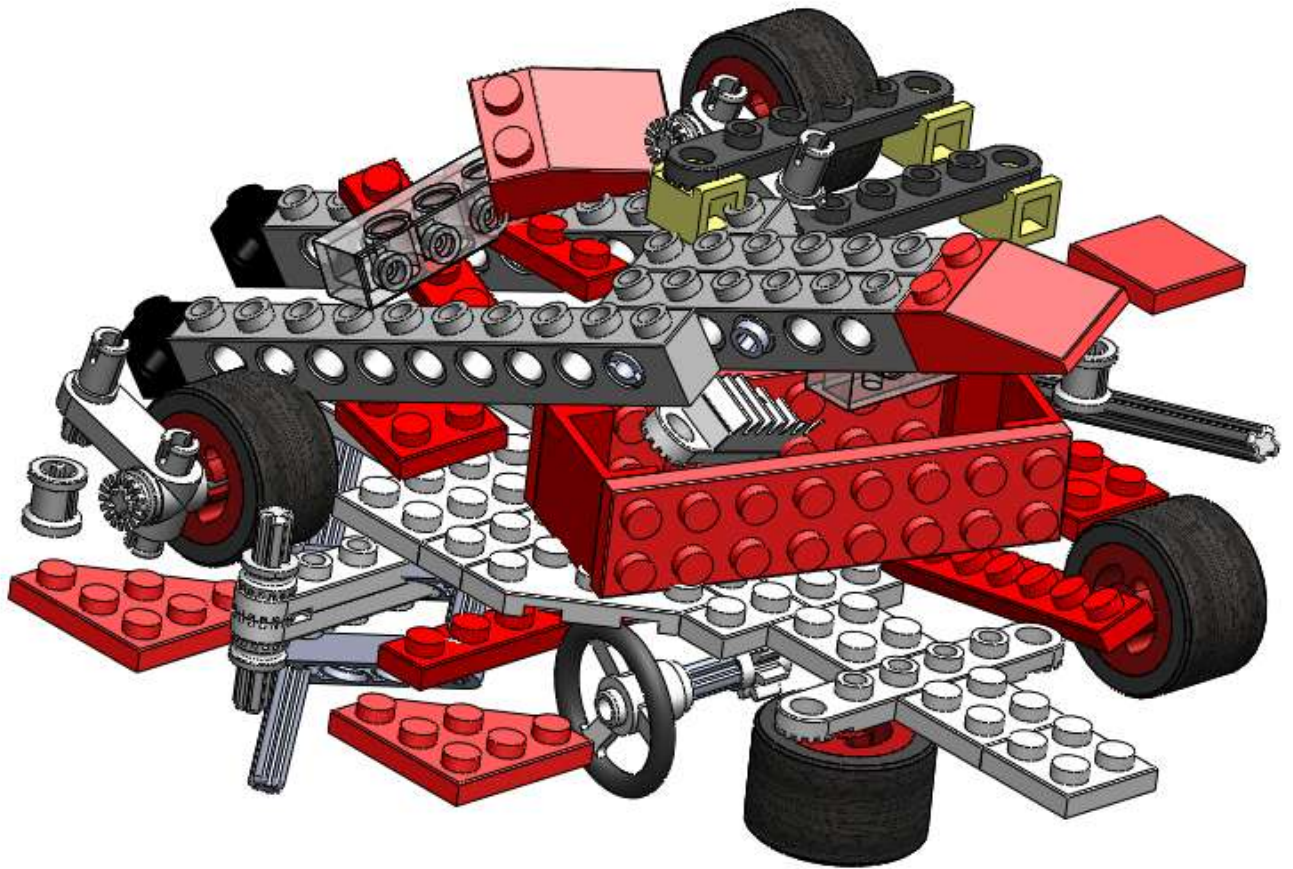
<p>207</p> <ol style="list-style-type: none"> <li>1. The entire part will shift back to the starting position.</li> <li>2. Enter the size of 16mm:</li> </ol> <div data-bbox="272 479 643 658" style="border: 1px solid red; padding: 5px;">  </div> <ol style="list-style-type: none"> <li>3. Click OK: </li> </ol>	
<p>208</p> <div data-bbox="272 792 443 972" style="text-align: center;">  </div> <p><b>Fantastic!</b></p> <p>You have successfully completed your first building blocks assembly using 3D software by SolidWorks®.</p>	





## Did you like this tutorial?

If you would like to use it with your students to prepare them for the future, you'll need the required models (parts). (The SolidWorks Parts and Assemblies)



*For use with SolidWorks® Educational Release 2010-2011*

To acquire the 3D models for use with this Tutorial in combination with SolidWorks®, please contact Jack van den Broek, the author of this Tutorial.

[j.vandenbroek@vakcollege.nl](mailto:j.vandenbroek@vakcollege.nl)