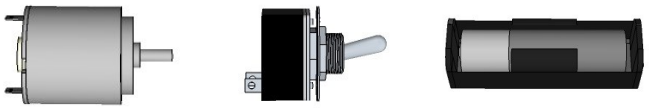
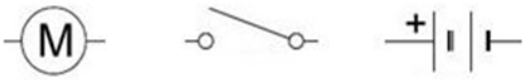
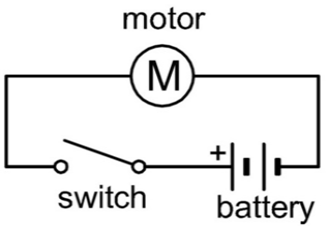
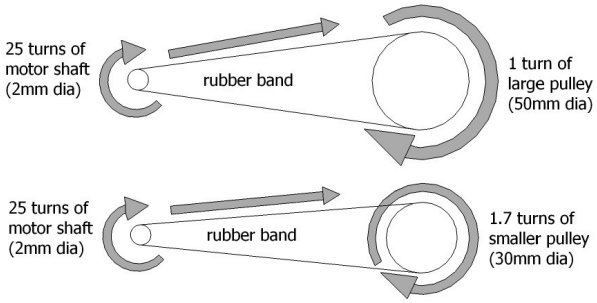
Suggested answers to Fairground Rides Worksheet

Name these electrical parts: 	Motor, switch and cell or battery (although strictly speaking a battery consists of two or more cells)
Draw your circuit using these circuit symbols, and using lines to represent the wires. Label the components. 	
Is metal an insulator or a conductor?	A conductor
Is plastic an insulator or a conductor?	An insulator
What could happen if you short circuit your battery?	It could get hot and possibly burn your fingers.
What will happen if you leave the circuit switched on for a long time?	You will drain the battery.
Why does the pulley need to be a tight fit on the rotating wooden rod (or shaft)?	It needs to be a tight fit so that when the pulley is driven the rod turns. Otherwise it will slip.
Which of your items are acting as bearings?	The wooden wheels with the 6 mm holes. If the shaft is rotating in the central holes in the base then these are also acting as bearings.
Which item is acting as a drive belt to turn the wooden rod?	The rubber band.

Fairground Rides Worksheet
Suggested answers continued

Does a fairground ride with a larger pulley rotate faster or more slowly than one with a smaller pulley?	A fairground ride with a larger pulley rotates more slowly.
Which forces are slowing your fairground ride down?	Friction and air resistance are slowing the ride down.
Which tools did you use to make your fairground ride?	Hacksaw, vice, sandpaper, glue gun, scissors, pencil, ruler, protractor, pair of compasses.
Extension questions	
Calculate the speed of your passengers as follows: Time 10 rotations Calculates number of revolutions per minute (rpm) Estimate diameter of circle travelled by passengers Calculate distance travelled in one revolution Calculate distance travelled in one minute Calculate distance travelled in one hour Convert to miles per hour	Example: Time T for 10 rotations = 8 seconds Rotational speed in rpm = T x 60 / 10 = 48 rpm Diameter of circle = 38 cm = 0.38 m Distance travelled per revolution = π x 0.38 = 1.2 m Distance per minute = 1.2 x 48 = 58 m Distance per hour = 58 x 60 = 3500 m = 3.5 kmph Miles per hour = 3.5 x 5 / 8 = 2.2 mph
If you were designing a real rotating fairground ride, suggest some safety aspects you would consider.	Possible answers: Making the structure strong enough so that it doesn't break, preventing passengers falling out or climbing out while the ride is moving, making sure the ride is balanced, emergency stops, electrical safety, inspection and maintenance, making it safe to erect, take down and transport to another site..
Explain why the size of the pulley affects how fast your fairground ride rotates. 	If the motor turns 25 times then the large pulley rotates once (assuming the rubber band doesn't slip). If the motor turns 25 times then the small pulley rotates 1.7 times. So if the motor is rotating at the same speed the fairground ride with the smaller pulley should rotate faster.