

Acknowledgements

While the authors get their names on the cover of books and workbooks, a book isn't the result of the efforts of only the authors - it's a team effort by a lot of talented people. Please take a moment to look at our acknowledgements to see a list of the great people who all made important contributions to this series of workbooks.

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Book 2 - Copyright Agreement

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YOU NEED :

Bring in a number of different types of screws to view.

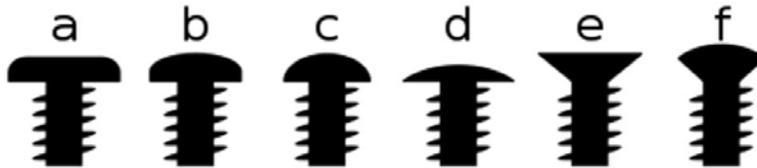
Screw

EXPLORE

You've had a look at what the thread on a screw looks like, but have you ever noticed that

- the heads of screws can have different shapes
- the tops of screws can have different shapes

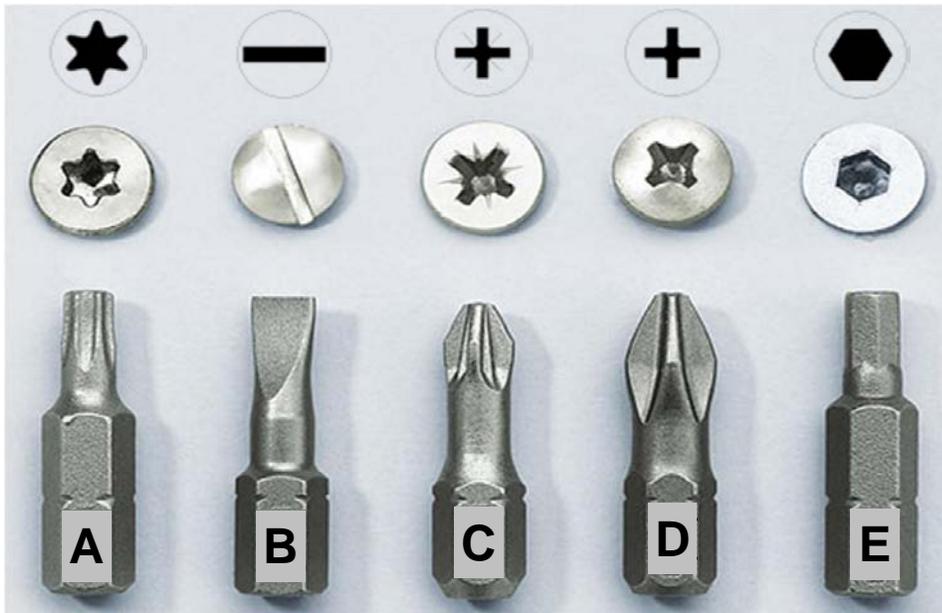
See if you can find out and match the correct names of these types :



- flat (countersunk)
- pan
- truss
- round
- button
- oval

The tops of screws look and get their names from the type of screwdriver that you have to use to turn (drive) the screw.

See if you can find out and match the correct names of these more common types :



- Hex socket (Allen)
- Pozidriv (SupaDriv)
- Slotted (flat or straight)
- Phillips (crosshead)
- Torx

Do some research on the names of these :

	<input type="text"/>		<input type="text"/>		<input type="text"/>
	<input type="text"/>		<input type="text"/>		<input type="text"/>
	<input type="text"/>		<input type="text"/>		<input type="text"/>

The only limit to your imagination ... is the power of your mind !



DESIGN, MAKE & TEST

Try this on your own

== For this activity you need : ==

spaghetti
marshmallows



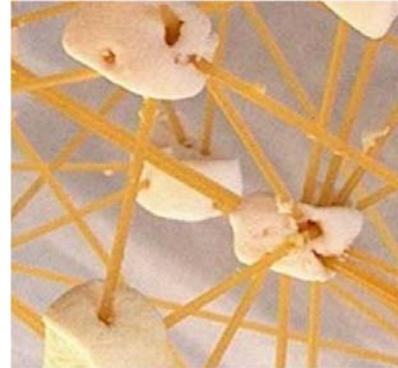
◆ Use the marshmallows and spaghetti to design and make a structure that:

- ✎ can support a golf ball for 20 seconds without collapsing
- ✎ can support a golf ball as high as possible
- ✎ does not have pieces that break or fall off



You earn 25 points if your model supports the golf ball for 20 seconds.

An extra 5 points for every centimetre your ball is above 10 centimetres.



Cut the marshmallows into quarters or use mini marshmallows.

✎ Option 1 : Limitless (marshmallows)

✎ Option 2 : Limits on - number of marshmallows

◆ Complete the following evaluation sheet on someone else's model.

Evaluate - A Partner



How many points did you get for this activity ?

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HANDS ON TECHNOLOGY

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YOU NEED :

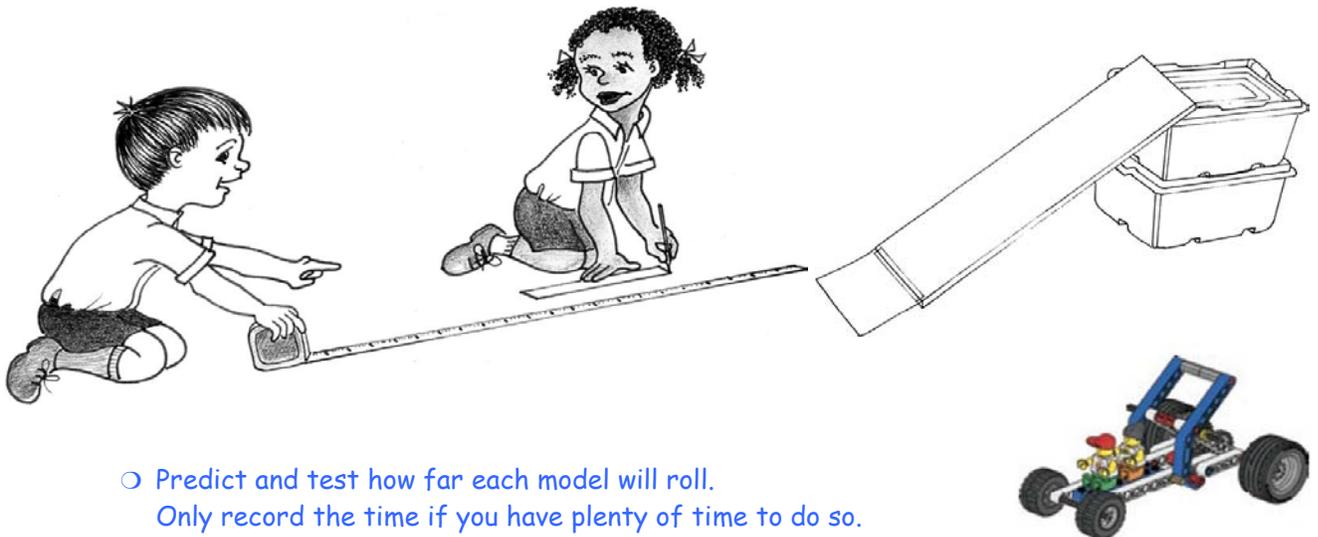
Flywheels

10A 10B

BUILD & EXPLORE

- You will need : A ramp - see ramp idea on ramp page.
- You will need : A ruler / tape measure
- Work with a partner or in a group, so that you have :
 - one person to release the model on the ramp
 - one or two people to measure the distance travelled
 - and one person to write down / record the results

NB - It is very important that you each predict a distance before you actually test each model.



- Predict and test how far each model will roll.
Only record the time if you have plenty of time to do so.



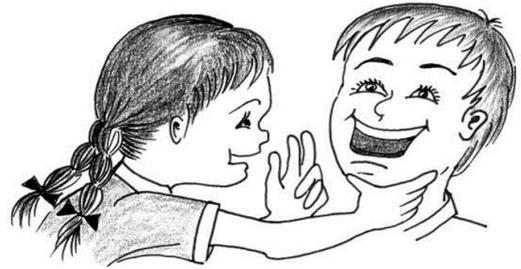
My combination	My prediction	Actual distance			Time
		1st	2nd	3rd	
B + B <i>Step 20</i>					
D + D <i>Step 22</i>					
F + F <i>Step 24</i>					

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Types of Gears

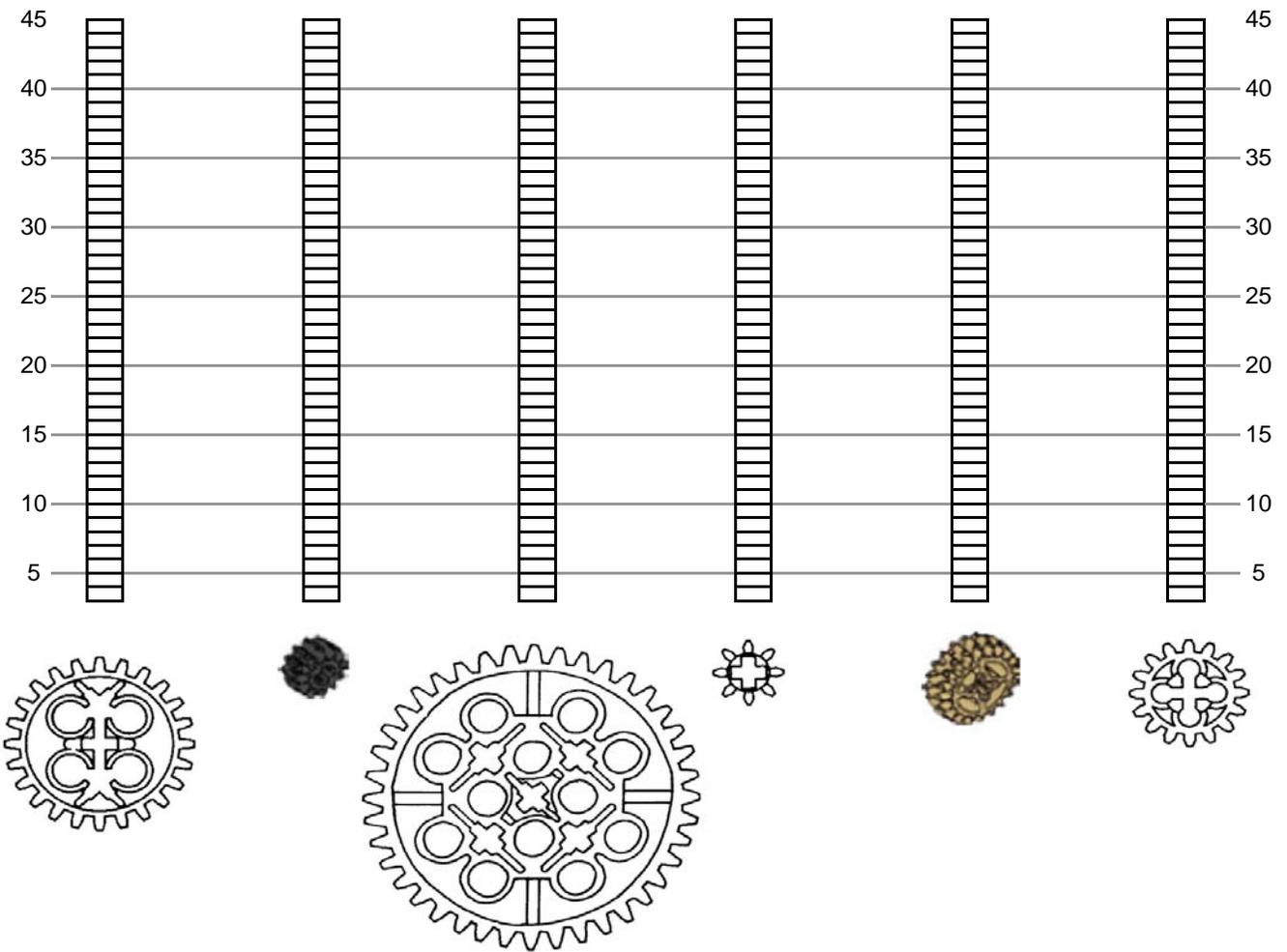
- ▶ How many teeth do you have ?
Ask a partner to count for you.

- ▶ How many does your partner have ?



- Take one example of each of the different sized gears. (You should have 6.)
- Count the number of teeth on each of them, and colour in the chart below to show the number.

Use different colours for the different gears, if you have.



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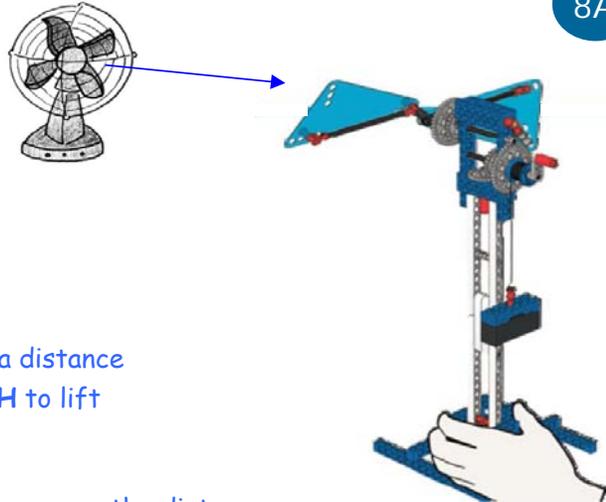
YOU NEED :

Windmill

8A 8B

BUILD

Build the model **8A** and **8B**
Stop and Test at **step 17**



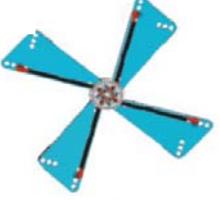
- Place the model in front of a fan.
- Move the model back and forth to find a distance where the wind speed is **JUST ENOUGH** to lift the black weighted brick, slowly.
- Mark the spot where this happens, and measure the distance.

NB - Now, always test from this distance !

- ▶ What is the distance you measured from the fan ? cm
- ▶ Does the fan have speed settings ?
- ▶ If it does, what setting was it on when you tested the wind ? 1 2 3 4 5

What difference does the number of sails make ?

- Predict and then test how fast each design will lift the weighted brick.

	 2 sails	 3 sails	 4 sails
▶ What distance is your model from the fan ?	<input type="text"/> cm	<input type="text"/> cm	<input type="text"/> cm
▶ What distance must the weight travel from the bottom to the top ?	<input type="text"/> cm	<input type="text"/> cm	<input type="text"/> cm
Predict First !			
▶ How long do you think it will take to lift the weight ?	<input type="text"/> secs	<input type="text"/> secs	<input type="text"/> secs
Now time it !			
▶ How long does it take to lift the weight ?	<input type="text"/> secs	<input type="text"/> secs	<input type="text"/> secs
▶ What speed is the weight moving at ?	<input type="text"/> cm/sec	<input type="text"/> cm/sec	<input type="text"/> cm/sec

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