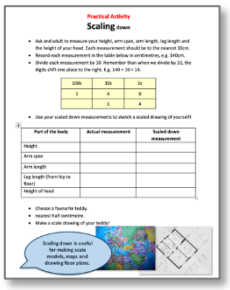
Week 15, Day 3

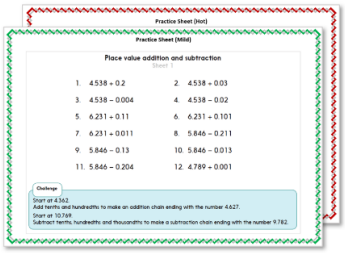
Scaling down using division strategies

Each day covers one maths topic. It should take you about 1 hour or just a little more.

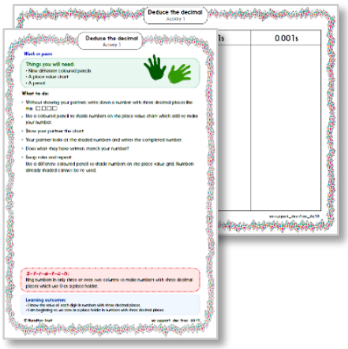
1. Start by sharing the **Practical activity** with a grown-up.


Practical Activity
Scaling down

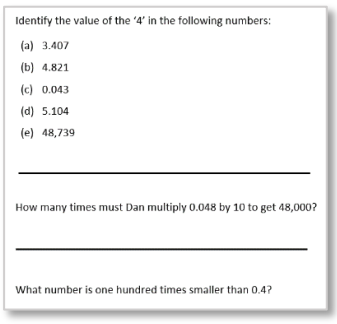
2. Tackle the questions on the **Practice Sheet**.
There might be a choice of either Mild (easier) or Hot (harder)!
Check the answers.


Practice Sheet (Hot)
Practice Sheet (Mild)
Place value addition and subtraction

3. Finding it tricky? That's OK… have a go with a grown-up at **A Bit Stuck?**


Deduce the decimal

4. Have I mastered the topic? A few questions to **Check your understanding**.
Fold the page to hide the answers!


Identify the value of the '4' in the following numbers:
(a) 3.407
(b) 4.821
(c) 0.043
(d) 5.104
(e) 48,739
How many times must Dan multiply 0.048 by 10 to get 48,000?
What number is one hundred times smaller than 0.4?

Practical Activity

Scaling down

- Ask an adult to measure your height, arm span (distance from left fingertip to right fingertip, arms outstretched), arm length, leg length (hip to floor), and the length of your head. Each measurement should be to the nearest 10cm.
- Record each measurement in the table below, in centimetres, e.g. 140cm.
- Divide each measurement by 10. Remember that when we divide by 10, the digits shift one place to the right, e.g. 140 ÷ 10 = 14.

100s	10s	1s
1	4	0
	1	4

- Use your 'scaled down' measurements to sketch a scaled drawing of yourself!

Part of the body	Actual measurement	Scaled down measurement
Height		
Arm span		
Arm length		
Leg length (hip to floor)		
Height of head		

- Choose a favourite teddy.
- Use a tape measure to measure the same parts of its body to the nearest centimetre.
- Then divide by 4 to give a scaled down measurement. Remember that to divide by 4, we can halve and halve again. If the measurement is tricky to halve twice, ask an adult to help you to write the scaled measurement to the nearest half centimetre.
- Make a scale drawing of your teddy!

Scaling down is useful for making scale models and drawing maps and floor plans.

Practice Sheet for All
Scaling down

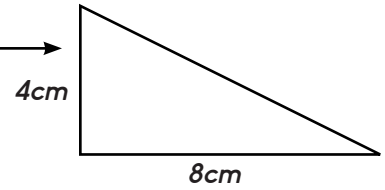
1. Draw a square with each side 16cm.
   Divide each side by 4 and draw a new scaled down square.

2. Draw a square with each side 14cm.
   Divide each side by 4 and draw a new scaled down square.

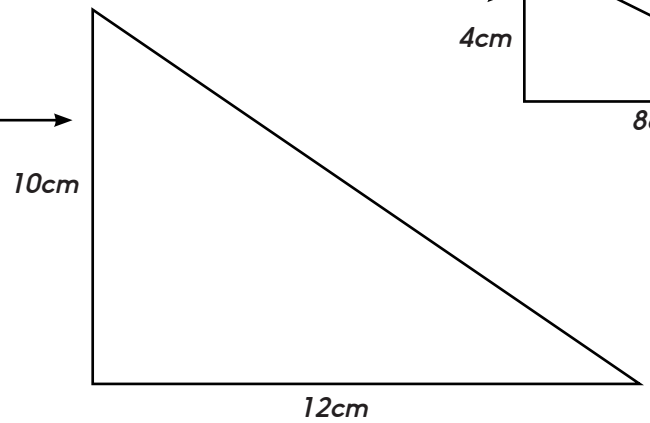
3. Draw a rectangle measuring 10cm by 8cm.
   Divide each side by 4, and draw a new scaled down rectangle.

4. Draw a rectangle measuring 8cm by 12cm.
   Divide each side by 4, and draw a new scaled down rectangle.

5. Draw a right-angled triangle like this: →
   Divide each side by 4 and draw a new triangle.



6. Draw a right-angled triangle like this: →
   Divide each side by 4 and draw a new triangle.



Hot: Now have a go at this Challenge!

Challenge

Draw two more right-angled triangles that have one side longer than 15cm and one side between 11 and 15cm.
Now reduce the triangles by a scale factor of 4.

Practice Sheet Answers

Scaling down

Accept answers where children have drawn the following:

1. A square with each side 4cm.
2. A square with each side 3.5cm.
3. A rectangle measuring 2.5cm by 2cm.
4. A rectangle measuring 2cm by 3cm.
5. A right-angled triangle with a 1cm vertical side and a 2cm horizontal side.
6. A right-angled triangle with a 2.5cm vertical side and a 3cm horizontal side.

Challenge

Draw two more right-angled triangles that have one side longer than 15cm and one side between 11 and 15cm.

e.g.
1. Right-angled triangle with sides 16cm and 12cm
2. Right-angled triangle with sides 20cm and 14cm
3. Right-angled triangle with sides 24cm and 12cm

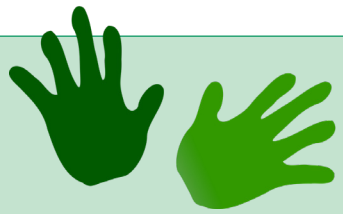
Now reduce the size of the triangles by 4.

e.g.
1. New sides 4cm and 3cm
2. New sides 5cm and 3.5cm
3. New sides 6cm and 3cm

A Bit Stuck?
Halve, halve

Work in pairs

Things you will need:
- A pencil
- A sheet of function machines
- 10s and 1s place cards if you find them helpful



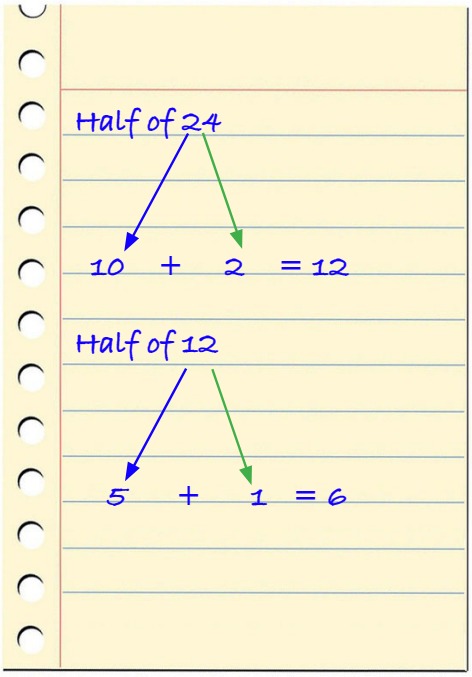
What to do:

- Choose a number to divide by 4:

  12 16 20 24 28 44 48 84 88

  Write it on the function machine sheet. Halve it twice to divide by 4.
  Write a number sentence.

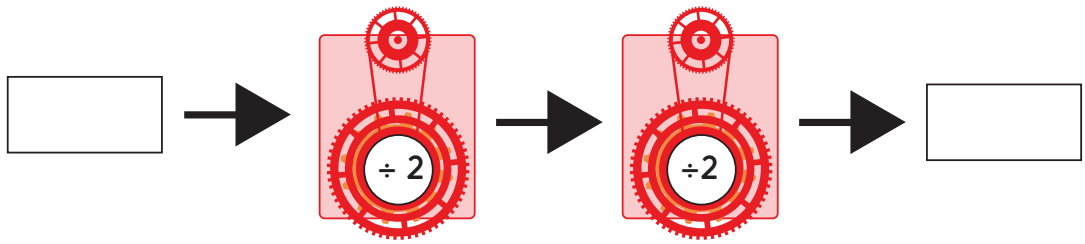
- Repeat with at least three other numbers.



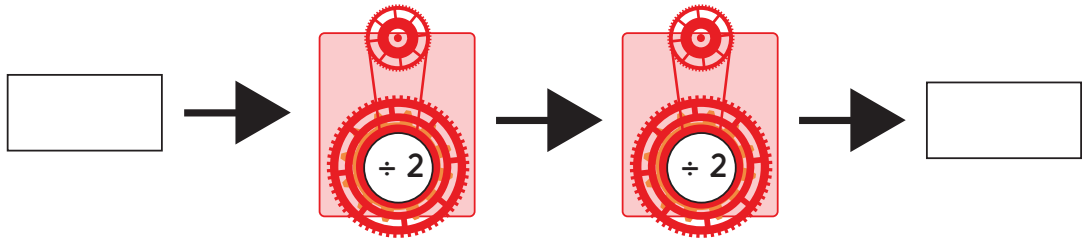
S-t-r-e-t-c-h:
Choose one of your answers. Divide by 4 by halving twice.
What do you notice?

Learning outcomes:
- I can divide by 4 by halving twice.
- I understand that doubling is the opposite of halving.

A Bit Stuck?
Halve, halve



□ ÷ 4 = □



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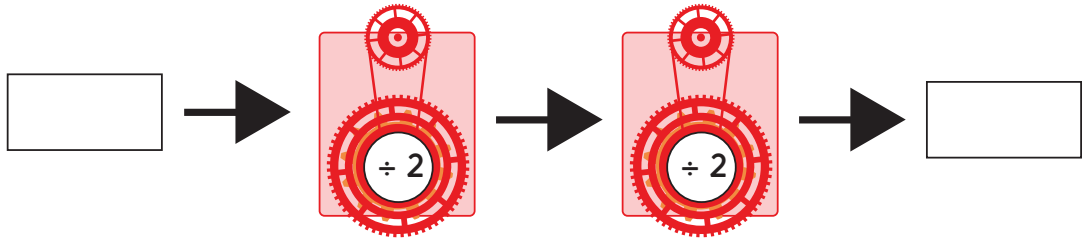

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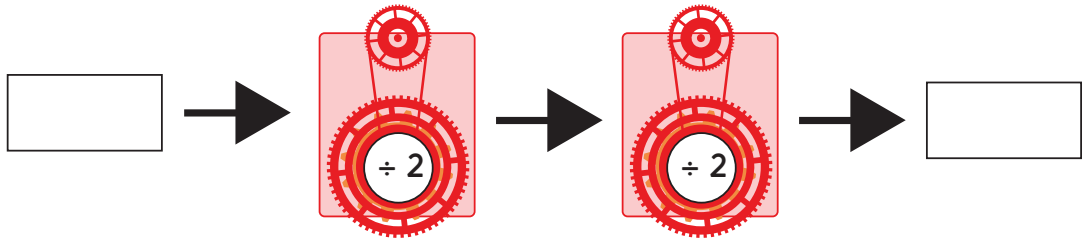

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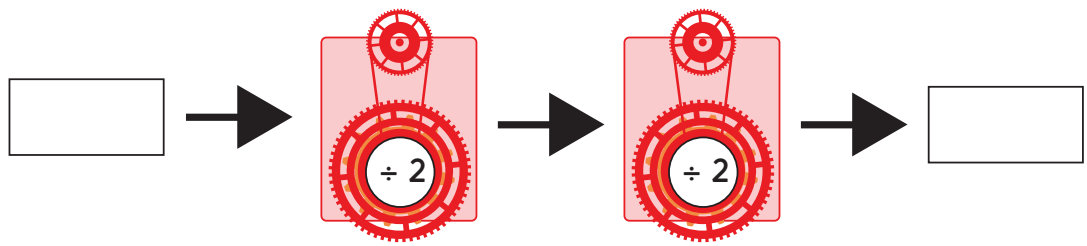

□ ÷ 4 = □

Place Value Cards

Check your understanding

Questions

A painting in the museum measures 160cm by 100cm.
The gift shop sells posters of the painting at $^1/_4$ full size and postcards at $^1/_{10}$ full size.
How big are posters and postcards?

A dinosaur was thought to be 240cm tall and 840cm long.
A scale model of it is being made. Each measurement will be $^1/_4$ of the actual size.
A toy version is being made with each measurement being $^1/_{10}$ of the actual size.
Calculate the dimensions of the scale model and the toy version.

Fold here to hide answers.

Check your understanding

Answers

A painting in the museum measures 160cm by 100cm.
The gift shop sells posters of the painting at $^1/_4$ full size and postcards at $^1/_{10}$ full size.
How big are posters and postcards?
Posters are 40cm by 25cm.
Postcards are 16cm by 10cm.

A dinosaur was thought to be 240cm tall and 840cm long.
A scale model of it is being made. Each measurement will be $^1/_4$ of the actual size.
A toy version is being made with each measurement being $^1/_{10}$ of the actual size.
Calculate the dimensions of the scale model and the toy version.

Scale model – 60cm by 210cm
Toy version – 24cm by 84cm
Children should be using mental maths skills to solve these, e.g. halving and halving again to divide by 4, moving digits to divide by 10.