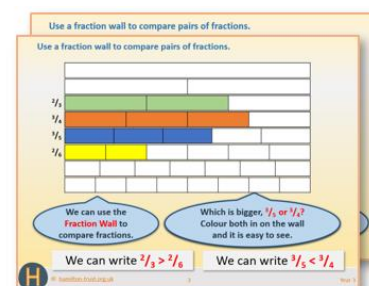


Week 12, Day 2

Solve problems requiring scaling by simple fractions.

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

1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.



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 (Mild)

Place value addition and subtraction

1. $4.538 + 0.2$	2. $4.538 + 0.03$
3. $4.538 - 0.004$	4. $4.538 - 0.02$
5. $6.231 + 0.11$	6. $6.231 + 0.101$
7. $6.231 + 0.011$	8. $5.846 + 0.211$
9. $5.846 - 0.13$	10. $5.846 - 0.013$
11. $5.846 - 0.204$	12. $4.789 + 0.001$

Challenge

Start at 4.542.
Add tenths and hundredths to make an addition chain ending with the number 4.627.
Start at 10.749.
Subtract tenths, hundredths and thousandths to make a subtraction chain ending with the number 9.742.

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

Deduce the decimal

1000s

0.001s

Things you will need:

- Nine different coloured pencils
- A place value chart
- A partner

What to do:

- Without showing your partner, write down a number with three decimal places like 1.123.
- Ask your partner to deduce the number by asking questions about the place value chart which add up to make your number.
- Write your partner's questions.
- Your partner looks at the number and writes the completed number.
- Swap roles and make another number.
- Keep roles and repeat.
- Ask a different friend to deduce the number on the place value chart. Number cards should be used to help.

Learning outcomes:

- We can use a place value chart to help us deduce the number.
- We can use a place value chart to help us deduce the number.
- We can use a place value chart to help us deduce the number.

Challenge:

Write a number with three decimal places.

4. Think you've cracked it? Whizzed through the Practice Sheets? Have a go at the **Investigation...**

Learning Reminders

Solve problems requiring scaling by simple fractions.

Hogwarts

Every dimension of a scale model of Hogwarts is $\frac{1}{10}$ of what would be real life-size. In other words, the designers had to divide every length and height by 10 so that the model would look right and be 'in proportion'.

A bedroom in Hogwarts is 4.6m by 4.2m, and the scale model is to be $\frac{1}{10}$ of this. To work out the scale dimensions change the lengths to centimetres and divide by 10.

4.6m = 460cm.

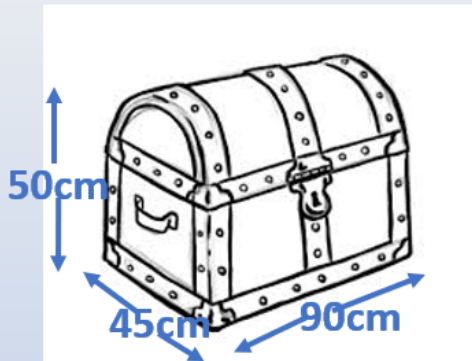
4.2m = 420cm.

The size of the bedroom in the model will be 46cm by 42cm.

Learning Reminders

Solve problems requiring scaling by simple fractions.

Work out the measurements needed for a scale model of the 4-poster bed and the trunk. Remember divide by 10 each time.



Answers

Bed: 15cm by 19cm by 20cm.
Trunk: 4.5cm by 9cm by 5cm.

Practice Sheet Mild

Scale bedroom at Hogwarts Castle

Calculate the dimensions of everything in the model bedroom.
Each measurement needs to be one tenth of the life-size measurements.
Check the model dimensions for the single bed, then complete the table.

Item	Life size dimensions	Model dimensions
Single bed	90cm wide, 2m long, 60cm high	9cm wide, 20cm long, 6cm high
Owl's cage	90cm tall, 40cm wide, 40cm deep	
Box of potions	30cm by 20cm by 20cm	
Desk	80cm tall, 1.2m wide, 70cm deep	
Spells book	50cm tall, 30cm wide, 10cm deep	
Wardrobe	80cm wide, 1.8m tall, 50cm deep	
Chest of drawers	80cm wide, 80cm tall, 40cm deep	
Bedside drawers	50cm wide, 40cm deep, 60cm tall	

Practice Sheet Hot

Scale bedroom at Hogwarts Castle

Calculate the dimensions of everything in the model bedroom.
Each measurement needs to be one tenth of the life-size measurements.

Item	Life size dimensions	Model dimensions
Single bed	90cm wide, 2m long, 60cm high	
Owl's cage	90cm tall, 40cm wide, 40cm deep	
Box of potions	30cm by 20cm by 20cm	
Desk	80cm tall, 1.2m wide, 70cm deep	
Spells book	50cm tall, 30cm wide, 10cm deep	
Wardrobe	80cm wide, 1.8m tall, 50cm deep	
Chest of drawers	80cm wide, 80cm tall, 40cm deep	
Bedside drawers	50cm wide, 40cm deep, 60cm tall	

Challenge

Think of three more items in the bedroom, give an estimate of their life size dimensions and the corresponding model dimensions.

Practice Sheets Answers

Scale bedroom at Hogwarts Castle (mild & hot)

Item	Life size dimensions	Model dimensions
Single bed	90cm wide, 2m long, 60cm high	9cm wide, 20cm long, 6cm high
Owl's cage	90cm tall, 40cm wide, 40cm deep	9cm tall, 4cm wide, 4cm deep
Box of potions	30cm by 20cm by 20cm	3cm by 2cm by 2cm
Desk	80cm tall, 1.2m wide, 70cm deep	8cm tall, 12cm wide, 7cm deep
Spells book	50cm tall, 30cm wide, 10cm deep	5cm tall, 30cm wide, 1cm deep
Wardrobe	80cm wide, 1.8m tall, 50cm deep	8cm wide, 18cm tall, 5cm deep
Chest of drawers	80cm wide, 80cm tall, 40cm deep	8cm wide, 8cm tall, 4cm deep
Bedside drawers	50cm wide, 40cm deep, 60cm tall	5cm wide, 4cm deep, 6cm tall

Challenge

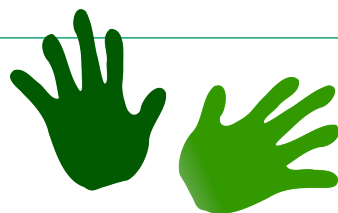
Item	Approx life size dimensions	Model dimensions
<i>e.g. Trunk</i>	<i>95cm long, 70cm tall, 40cm wide</i>	<i>9.5cm long, 7cm tall, 4cm wide</i>
<i>e.g. Television</i>	<i>1m wide, 60cm tall, 10cm deep</i>	<i>10cm wide, 6cm tall, 1cm deep</i>
<i>e.g. Stool</i>	<i>60cm tall, 40cm x 40cm square seat</i>	<i>6cm tall, 4cm x 4cm square seat</i>

A Bit Stuck?

Common multiples

Things you will need:

- A 1-6 dice
- or
- A set of 2-6 cards (*see resources*)



1. Work in pairs. Each choose a different colour pencil.
2. Take it in turns to roll two 1-6 dice. If you roll 1, roll again.
3. Find a number on the grid that is a common multiple of both numbers. Ring it in your chosen colour.
4. Write a sentence about the common multiple.
5. Try to get four numbers in a row.

20	54	9	25	50
42	6	4	16	12
30	18	10	15	60
8	48	24	40	36

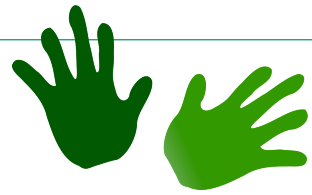
1	2	3	4	5
6	7	8	9	10

Investigation

Hogwarts Castle

Things you will need:

- Design your bedroom at Hogwarts Castle
(see resources)



- Imagine you are going to build a model of Hogwarts Castle! The model will be one tenth of the size of the real-life items.
- Choose at least 8 items from the list and calculate what size they will be in the model, writing down the model dimensions for each. The room must sleep at least two people...
- Stick together some pieces of paper, then draw a picture - using the scaled down measurements - to show where everything you have chosen will fit.
- Which dimensions will you need to create this 2-D representation?
- What is the smallest room that could reasonably contain all your items?

Challenge

You have a budget that will allow 3 more items that are not on the list – you could choose 3 things from your own bedroom and measure them or just use your imagination. Write down their real dimensions and the dimensions for the model.



Investigation Hogwarts Castle



Choose from the following items to design your bedroom:

- Single bed 90cm wide, 2m long, 60cm high
- Cabin bed 2.1m long, 90cm wide, 1m high
- 4 poster bed 1.5m wide, 1.9m long, 2m high
- Trunk 90cm wide, 50cm tall, 40cm wide
- Owl's cage 90cm tall, 40cm wide, 40cm deep
- Box of potions 30cm by 20cm by 20cm
- Desk 80cm tall, 1.2m wide, 70cm deep
- Spells book 50cm tall, 30cm wide, 10cm deep
- Flat screen TV 1m wide, 60cm tall and 10cm deep
- Mini TV 30cm by 20cm by 10cm
- CD player 40cm by 20cm by 20cm
- Cube seat, 40cm by 40cm by 40cm
- Video console 30cm by 20cm by 10cm
- Wardrobe, 80cm wide, by 1.2m tall and 50cm deep
- Chest of drawers 80cm wide, 80cm tall, 40cm deep
- Bedside drawers 50cm wide, 40cm deep, 60cm tall

