

Reasoning and Problem Solving

Decimals and Percentages – Year 5

About This Resource

This resource is aimed at Year 5 Secure and has been designed to give children the opportunity to consolidate the skills they have learned in Spring Block 3 Decimals and Percentages.

The questions are based on a selection of the same 'small steps' that are addressed in the block, but are presented in a different way so children can work through the pack independently and demonstrate their understanding and skills.

Small Steps

Decimals up to 2 decimal places

Decimals as fractions

Understand thousandths

Thousandths as decimals

Rounding decimals

Order and compare decimals

Understand percentages

Percentages as fractions and decimals

Equivalent F.D.P

National Curriculum Objectives

Mathematics Year 5: (5F6b) [Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents](#)

Mathematics Year 5: (5F7) [Round decimals with two decimal places to the nearest whole number and to one decimal place](#)

Mathematics Year 5: (5F8) [Read, write, order and compare numbers with up to three decimal places](#)

Mathematics Year 5: (5F10) [Solve problems involving number up to three decimal places](#)

Mathematics Year 5: (5F11) [Recognise the per cent symbol \(%\) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal](#)

Mathematics Year 5: (5F12) [Solve problems which require knowing percentage and decimal equivalents of \$\frac{1}{2}\$, \$\frac{1}{4}\$, \$\frac{1}{5}\$, \$\frac{2}{5}\$, \$\frac{4}{5}\$ and those fractions with a denominator of a multiple of 10 or 25](#)

Did you like this resource? Don't forget to [review](#) it on our website.

Our First Family Adventure




The Jonas family are planning their first ever camper van holiday! James and Dinah have been working hard to get the campervan working. They refurbished the engine, remodeled the interior and designed their own spray paint for the outside. Now it's ready to go and they are planning a family adventure for three. Baby Jemiah is only 6 months old so they will need to be more prepared than most.


James is studying the weather reports to decide when the best time is to travel. Can you advise him?

1. Looking at the charts below, which week in which month is likely to have the least rainfall and highest temperatures?


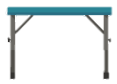








Temperature in °C

	Week 1	Week 2	Week 3	Week 4
June	12.56	12.65	12.95	13.21
July	13.41	13.5	14.82	15.01
August	15.03	16.01	14.99	16.1

Rainfall in mm

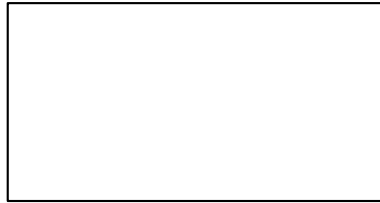
	Week 1	Week 2	Week 3	Week 4
June	15.32	14.09	16.01	12
July	9.05	9.35	12.69	14.02
August	10.03	4.3	8.99	4.03

2. Dinah has found a recommended kit list online, the website links to sites selling the kit. Some of the outdoor kit shops do special deals if you buy through the site. She is struggling to calculate her costs. She has managed to convert the first offer to a decimal number. Convert the rest of the percentages and fractions to decimals to help with her calculations.

	£25	Half price	<input type="text" value="0.5"/>		£50	Pay 90%	<input type="text"/>		£48	25% off	<input type="text"/>		£5	20% off	<input type="text"/>
	£32	pay $\frac{3}{4}$	<input type="text"/>		£12	10% off	<input type="text"/>		£14	pay 80%	<input type="text"/>		£15	pay $\frac{4}{5}$	<input type="text"/>
	£24	50% off	<input type="text"/>		£120	30% off	<input type="text"/>								

3. James is checking out the camp site fees. He knows their van measures 1.904m wide, 4.98m long and 1.399 high. Which pitches could he consider?

ORCABER CAMPING <i>Pitch sizing</i>	
<i>width x length</i>	<i>price per night</i>
1.599 x 5.2	£ 5
2.4 x 3.653	£ 4.50
2.9 x 4.99	£ 5.95
1.99 x 5.1	£ 4.95
2.859 x 4.982	£ 4.95



Dinah reminds James the awning she has ordered is 4m x 0.954m. Which pitch fits the camper van with the awning attached to the long side?



4. Dinah has planned the route to drive to the site. There is a ferry to catch and two bridges with weight limits. She needs to calculate the weight of the van and its kit, in addition to the passengers. Can you round each weight to 2 decimal places?

Sleeping bag
 $\frac{9}{10}$ kg

Camping Table
0.739kg

Gas Light
1.361kg

Walkers Map
0.045kg

Binoculars
0.359kg

Torch
0.093kg

Axe
0.453kg

Van & Luggage
1140kg

Camping Chair
 $1\frac{1}{5}$ kg

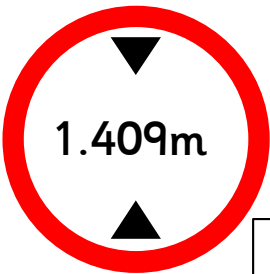
Travel Pan Set
 $2\frac{325}{1000}$ kg

Awning
 $38\frac{69}{100}$ kg

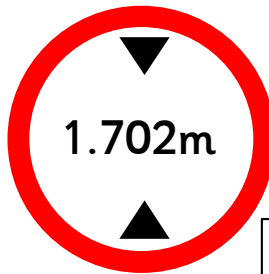
Passengers
168.747kg

Tick the weight and height limits which they could drive through or over.

Useful information: 1 tonne = 1000kg









5. James puts the journey time into his travel app and finds out it will take 18 hours to get to the camp site, including the ferry crossing. That's most of their first day's holiday!



That's $\frac{3}{4}$ of our day!

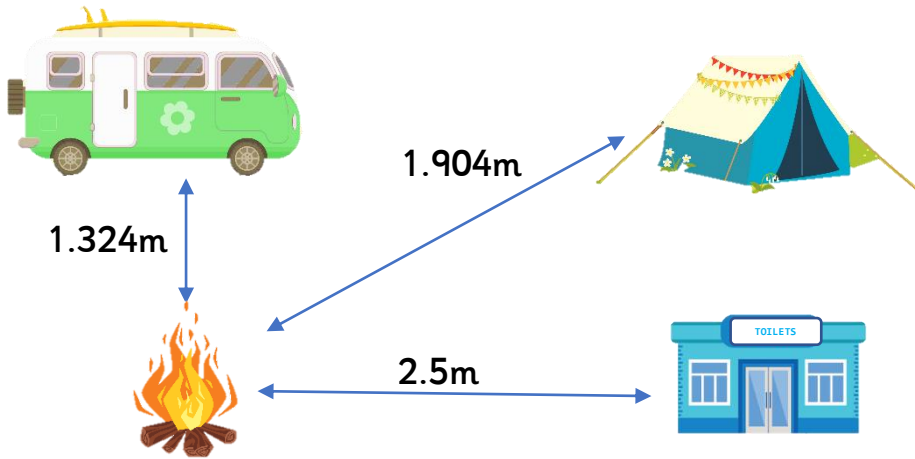


That's 0.75 of our day!

Who is correct? Explain your answer fully.

Reasoning and Problem Solving – Decimals and Percentages – Year 5

The Jonas family have arrived and are ready to unpack and chill out. The awning is up, the baby is settled for his nap and James has decided to set up a fire pit. He reads the camp site rules and begins to decide on where to build the fire.



ORCABER CAMPING
Site Rules

Fire Building

Minimum distance of 1.658m from campers or caravans.

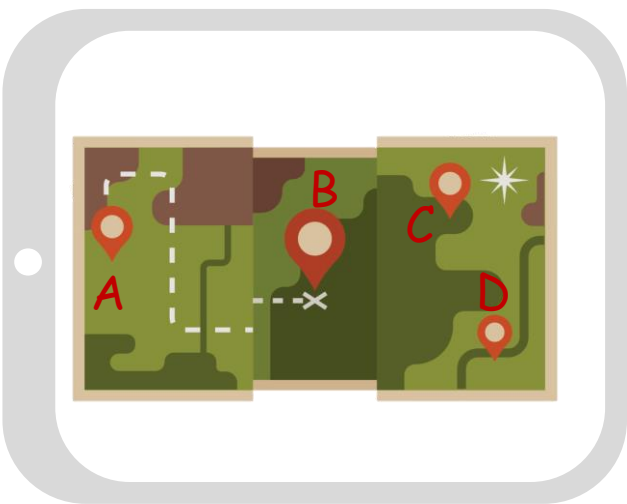
Minimum distance of 2.008m from tents.

Minimum distance of 3.678m from toilet block.

6. Is his planned fire pit acceptable? If so, why? If not, how could he adapt it?

Some French students, who have been travelling around Britain on foot, arrive at the campsite. Dinah remembers some of her high school French and begins to chat. They decide to join the family around the camp fire. Olivier and Francine, the students, begin to talk about how long they have been travelling and asking for ideas where to go. James looks at the distances to local tourist attractions on his travel app, and Dinah translates into French.

7. She can't recall how to say the decimal figures and needs to convert them to fractions, can you help her? Change the decimal distances to fractions above.



A to B	0.2m	<input type="text"/>
		<input type="text"/>
B to C	0.360m	<input type="text"/>
		<input type="text"/>
C to D	0.075m	<input type="text"/>
		<input type="text"/>
D to A	0.75m	<input type="text"/>
		<input type="text"/>



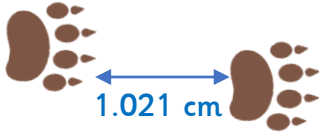
Reasoning and Problem Solving – Decimals and Percentages – Year 5

The next morning is bright and sunny, James and Dinah pack the baby in the carrier and head out to explore the campsite and the woodland beyond the tents.



In a clearing in the woods, they spot some animal tracks and follow the trail through the mud and across the river towards a den. James is curious as to which animal left the tracks. Dinah suggests they take photos and measure the distances between them. That night around the fire, they begin to research where they could have come from.

6.954 cm



	Track Size	Distance between tracks
Badger	Up to 7.983 cm	0.995 m – 1.547 m
Fox	No more than 6.45 cm	0.894 m – 1.045 m
Stoat	Less than 3.476 cm	0.045 m – 0.99 m
Dog	Around 5.897 cm	0.089 m – 0.999 m

8. Which animal could have left the tracks?

Justify your answer.

The holiday is over and all that planning meant the whole adventure went off without a single hitch. The Jonas family pack up, fill the camper with petrol and head back home. On the last stretch of motorway, there is a strange clunking sound; the van begins to slow and bounce around, the wheel pulling to the left. Dinah jumps out the driver's side and walks around.

OH NO!!! A flat tyre! to add insult to injury, when they look for the spare, it has also got a nail embedded in the tyre and is no use at all! James uses his trusty travel app to search for a garage. Put the garages in order from closest to furthest away.

TyresRUs.co.uk	$\frac{9}{10}$ m
RunFlat.co.uk	0.999m
FirstSupport.co.uk	$\frac{4}{5}$ m
GetMeHome.com	1.002m











Home safe and sound, even with their tyre drama, James and Dinah begin to plan their next adventure!



classroomsecrets.com

1. The fourth week in August is the best week to go, it has least rainfall and the highest temperature.

2.

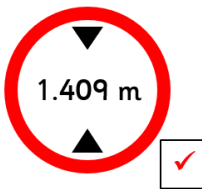

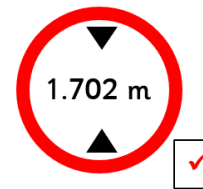
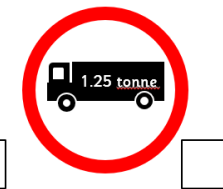
	£25 0.5		£50 0.9		£48 0.25		£5 0.2
	£32 0.75		£12 0.1		£14 0.8		£15 0.8
	£24 0.5						£120 0.3

Yellow callouts: Half price, Pay 90% off, 25% off, 20% off, pay $\frac{3}{4}$ off, 10% off, pay 80%, pay $\frac{4}{5}$, 50% off, 30% off.

3. They could consider renting 2.9×4.99 , 1.99×5.1 or 2.859×4.982
 With awning, could consider 2.9×4.99 or 2.859×4.95 (awning only affects width).

4.

Sleeping bag $\frac{9}{10}$ kg	0.9	Camping Table 0.739 kg	0.74	Gas Light 1.361 kg	1.36	Walkers Map 0.045 kg	0.05
Binoculars 0.359kg	0.36	Torch 0.093 kg	0.09	Axe 0.453 kg	0.45	Van & Luggage 1140 kg	1140
Camping Chair $1\frac{1}{5}$ kg	1.2	Travel Pan Set $2\frac{325}{1000}$ kg	2.33	Awning $38\frac{69}{100}$ kg	38.69	Passengers 168.747 kg	168.75

			
---	--	--	--

5. James and Dinah are both correct.
 There are 24 hours in a day and $\frac{3}{4}$ is $(24 \div 4) \times 3 = 18$, and $\frac{3}{4} = 0.75$ or they could have said 75% of their day.

6. No, James will need to place the fire pit at least 0.334m further from the campervan, 0.104m further from the tent and 1.178m further from the toilet block to ensure his plan is safe.

7.

A to B	0.2m	$\frac{1}{5}$
B to C	0.360m	$\frac{9}{25}$
C to D	0.075m	$\frac{3}{40}$
D to A	0.75m	$\frac{3}{4}$

8. The animal is likely a badger. The tracks each measure 6.954 cm which is less than the maximum badger print of 7.983cm, but more than the fox maximum of 6.45 cm. The other animal tracks are much smaller. Also the distance between the tracks, 1.021 cm, is within the badger range, it is also within the fox range, but as already stated, the track is too large to be a fox.

9. FirstSupport.co.uk – 0.8m

TyresRUs.co.uk – 0.9m

Runflat.co.uk – 0.999m

GetMeHome.com – 1.002m