

## Ratio and Proportion Prior Learning Assessment Q3 and Q4:

**Objective:** I can find the % of amounts.

I can use my knowledge of % to interpret pie charts. (mastery task)

NC RP2: solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison  
ST1. interpret pie charts and use these to solve problems

### Teacher Input Ideas:

Starter idea- decimal, percentage and fraction equivalents. Place different cards around the room and children to match the correct decimal, fraction and percentage equivalents.

Introduce the percentage sign. Ask the children what this means? Have they seen it used before? How do people work this out? Why is this sign used?

Display 50% of 80. Take children's suggestions of how this can be worked out. Encourage the children to explain how they did it and what knowledge they used. Children may suggest that they know that 50% is the same as a half. So, half 80 and we have 40.

Place 80 in the middle of a mind map  
I know 50% = 40.

What else can I work out from here? What would 25% be? When children have this, what would 75% be. Children to use knowledge of equivalent fractions to work out 75%, 25%, 50% and any others they can use.

Then introduce finding 10%. How would I find 10%? Once children can find 10% then look at other facts they can work out from this 20%, 30% 40% etc and 5%. Discuss how the children know how to do this. How would I find 1%? What would 2% be? How can I use this to help? Encourage children to explain how they have found different facts for the mind map and the calculations they have used.

When children are ready look at other fractions like 12%, 15% 35% 21% 57%etc. Encourage children to suggest ways they have worked this out. Children may want to create their own maps to show their understanding.

Some children may have been taught to multiply the percentage by the amount and then divide by 100: I want to find 25% of 80

$$\begin{array}{r} 80 \\ \times 25 \\ \hline 400 \\ 1600 \\ \hline 2000 \end{array}$$

$$2000 \div 100 = 20.$$

If children are using this method, ensure they can explain why this method works.

8% of 32

$$\begin{array}{r} 32 \\ \times 8 \\ \hline 316 \end{array}$$

$$316 \div 100 = 3.16$$

### Practice Activities

**Purple Practice:** Most suited for children who made errors in Question 3a of the prior assessment and will benefit from securing understanding of finding common percentages of amounts.

Set up the table as a supermarket with objects and suitable price tags (some are provided on the purple task sheet). Children to select a price tag/object and then a percentage tag. They should work out that percentage of the price. The children have simple percentages such as 50%, 25%, 10% and 75% where the children can use their knowledge of fractions to help. When the children show confidence, they can be challenged to finding 10% and use this to find 20% and 5%. The children can explore different price tag and percentage combinations to create different sums. Encourage the children to explain the methods and facts they have used.

**Green Practice:** Most suited for children who made errors in Q3b of the prior learning assessment.

As above set up a toy, clothes or electrical shop. Children to select a price tag and then a percentage tag. They should work out that percentage of the price. The children have percentages where they can use their knowledge of finding 10% and 1% to find the amounts of the price tag. The children can explore different price tag and percentage combinations to create different sums. There may also be opportunities for the children to apply other maths skills such as dividing by 10 and 100 and written multiplication method (for example for 7% they may do  $7 \times 0.32$ .)

**Yellow:** Most suited for children who made errors in Q3c of the prior learning assessment.

The children are presented with tags that present the calculation with a x sign (for example  $350 \times 12\%$ ). The children are to understand that x by is the same as 12% of that amount. Encourage the children to find a variety of ways to find the answer to each sum exploring which ways are the most efficient. For example, for 90% of an amount some children may: want to use the written x method; find 10% and then x by 9 or find 10% and then subtract this from the amount.

**Mastery:** There are 4 mastery tasks that can be selected from.

**Mastery 1:** This activity provides the opportunity for the children to apply their knowledge of finding the percentage of amounts. The children are further challenged by finding the new price of the product as the offer tags display 25 % off, etc. The children should suggest how they may work this out such as some children may suggest finding 75% or finding 25% of the amount and then subtracting this amount from the total. Encourage the children to think of their own strategies and explain how they have calculated the answer. This also provides the opportunity to apply written subtraction methods.

**Mastery 2:** Encourage the children to talk about this and how they are going to approach it before they start. You may need to discuss what they know about time and percentages as a larger group for a starting point for some. Encourage children to have a go at planning an approach first and then give intervention through questioning and collecting facts for those who may need a little help.

Such as 100% is 10 hours. So, what do you know about working out 15% of something. How will you do this? Children should identify that 10% would be 1 hour, therefore 5% will be 30mins. Children may then suggest ways to find a  $\frac{1}{4}$  of the 10 hours. Discuss with the children if they need to convert the hours into minutes or whether they can calculate 25% of 10 hours. Once the children have worked out that 25% is 2 hours and 30 minutes the children can prove that 28% battery will last longer than this. Some children may spot quickly that  $\frac{1}{4}$  of 10 hours is 2 hours and 30 minutes. Some children may want to work out 28% of 10 hours to further support their reasoning.

**Pie chart mastery 1 and 2:** (fluency) Most suited for children that have been taught about pie charts in statistics. If the children have not learnt about this yet, you may want to save this mastery for when pie charts have been taught. The children are presented with a pie chart in both tasks. The children are to use the information presented and their knowledge of pie charts to answer the questions. Pie chart mastery 2 has slightly trickier questions.

**Answers:**

**Yellow:**

- |            |           |         |
|------------|-----------|---------|
| 1) £109.50 | 2) £70.40 | 3) £189 |
| 4) £380    | 5) £280   | 6) £360 |

**Mastery 1:**

- 1) £ 3420      2) £8888.40      3) £7420.16

**Mastery 2:**

James's and Austin's tablets should be used to watch the film. Children should be able to prove and explain how they know this.

Some children may use this information to help to prove:

Leila's laptop will last for  $1 \frac{1}{2}$  hours

James's laptop will last for  $2 \frac{1}{2}$  hours

Austin's will last 2 hours 48 minutes

**Pie chart mastery 1:**

- 1) 50%      2) 10%      3) 4      4) 6

**Pie chart mastery 2:**

- 1) 30%      2) 9      3) 36      4) 10 children

£80

£60

£120

£300

£30

£25

10%

50%

25%

20%

75%

5%

£70

£120

£95

£75

£82

£102

60%

30%

12%

7%

35%

15%



Practical activity

£730 x

15%

£220 x

32%

210 x

90%

400 x

95%

£350 x

80%

£3000 x

12%

A car show room has offers on the cars below. Work out the new price of each car:

£4560



25% off the price

£9876



10% off the price

£8432

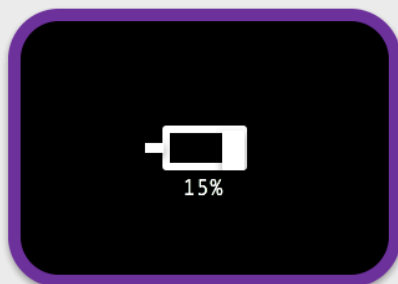


12% off the price

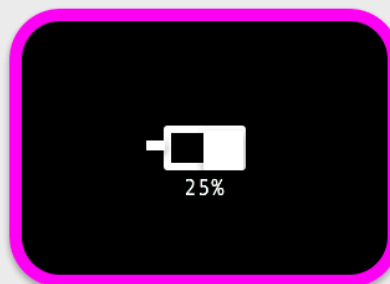
Record your calculations here:

Leila, Austin and James want to watch a film using one of their tablets. They can't decide whose tablet to watch the film on. None of the children have the chargers with them so they don't want the battery to run out before the film ends.

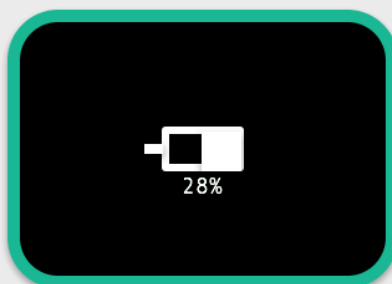
100% of battery lasts 10 hours if being used to watch films.



Leila's tablet



James's tablet

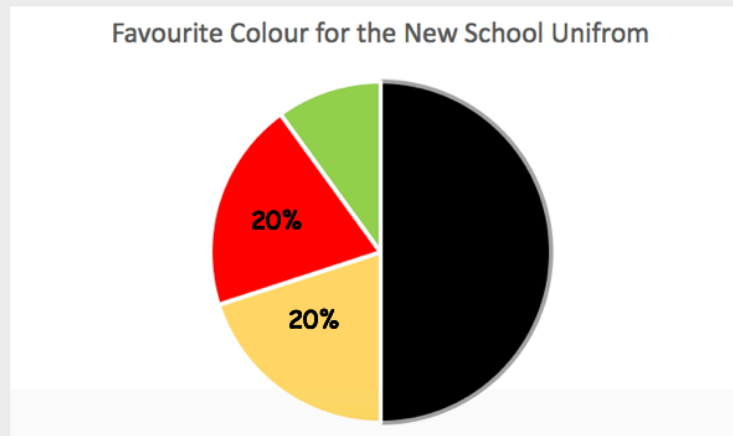


Austin's tablet

Use this information to work out if any of the tablets will have enough power to watch the entire film that lasts 2 hours and 30 minutes.

Which tablet would you use and why?

The school council voted for their favourite colour for the new school uniform. 20 children were asked in the school council. A pie chart was created to present the results.



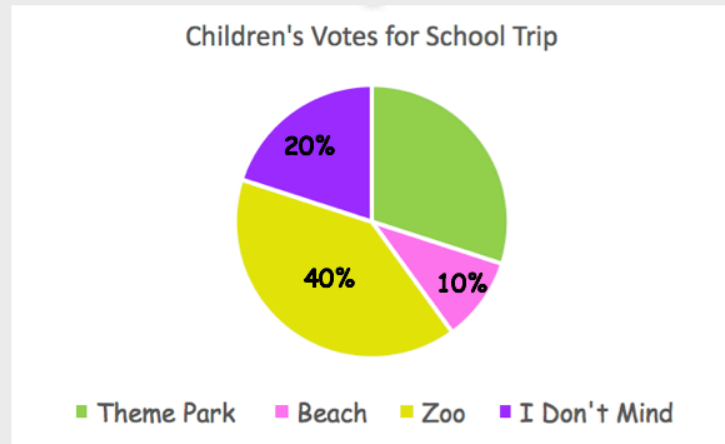
1) What percentage of people voted black?

2) What percentage of people voted green?

3) How many people voted for red?

4) How many more people voted for black than yellow?

Year 6 voted for where they would like to go for an end of year school trip. There are 90 children in Year 6. A pie chart was created to present the results.



1) What percentage of people voted for the theme park?

2) How many people voted for the beach?

3) How many people voted for the zoo?

4) Class 6T really want to go to the theme park. How many people do they need to change their vote from 'don't mind' to 'theme park' to change the results?