

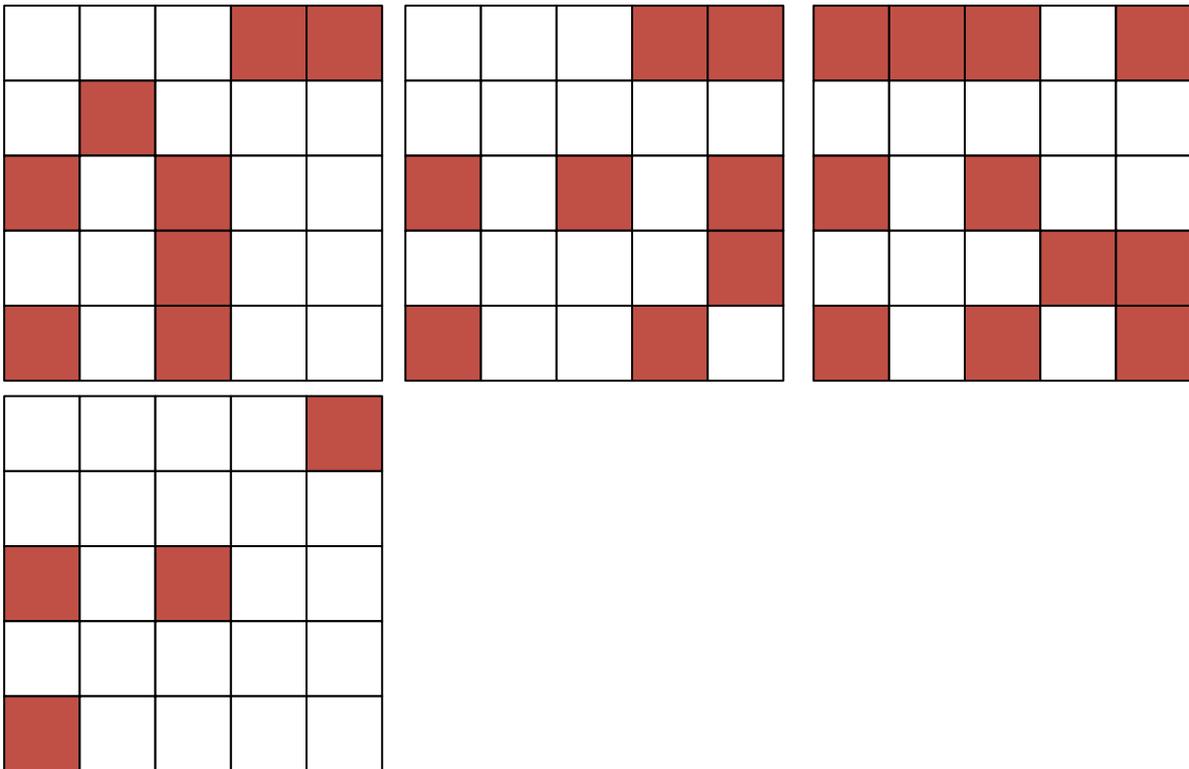
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Year 8

PERCENTAGES FRACTIONS AND DECIMALS

- There are 100 malteasers in a bag. 83 were eaten. How many were left? (Write your answer as a fraction and a decimal).
- There are 400 lego pieces in a box. Jules uses 216 to build a model truck. Write the percentage that he used.
- Copy out and fill in the missing boxes to make the statement true:

$$\boxed{} \% = \frac{\boxed{}}{100} = 0.2$$

- Clare reads 150 pages of her 500 page book. She says, I have $\frac{350}{500}$ pages left to read. Can she write this as a percentage of 100? Explain how or why?
- True or False: You can write 12.5% as a decimal. Explain your answer.
- Lilly has a 100 square. She colours in 25% of them and says, "I have colour a quarter of the squares." Is she correct? (Write your answer as a sentence).
- Look at the boxes below. They are the remnants of a 100 square that have been cut up. What percentage of the square was originally shaded?



- A golf club has 200 members. 58% of them are male. 50% of the female members are children.
 - How many male members are there in the golf club?
 - How many female child members are there in the golf club?

9. Daniel is saving money. His father offers him one of two lots of money:

I will give you
70% of £42

I will give you
45% of £65

Which of these two offers would be the most lucrative?

10. Jack and Jill both have a string of beads. They have red beads, blue beads, green beads and yellow beads.

Jack's beads are 50% red, 35% blue, 10% green and 5% yellow.

Jill's beads are 40% blue, 32% red, 20% green and 8% yellow.

They have the smallest amount of beads that is possible with those percentages.

- How many beads did Jack have?
- How many beads did Jill have?

Between them, Jack and Jill have 10 yellow beads, how many beads do they have altogether?

11. Alan draws a Pie Chart. The subject of the pie chart is Class 7s favourite colours. Remembering that there are 360° in a complete circle, calculate the angle that needs to be drawn for the following pieces of data:

Favourite Colour	Percentage
Red	45%
Green	36%
Blue	19%

How big should each sector of the bar chart be?

12. Mr Lee had a bag of red beans and a bag of black beans. Twenty percent of the total number of beans were black beans and there were 180g more red beans than black beans.

He transferred some of the red beans into the black bag so that there were now 30% of the beans in a mixed bag.

How many grams of beans were there in the bag of mixed beans?

13. Zainab and Nafisa both have a string of beads. They have red beads, blue beads, white beads, yellow beads and purple beads. They both count how many of each colour they have.

Zainab's beads are 30% blue, three-eighths white, one in ten are red and 0.2 of total number of beads are purple. Zainab has 15 yellow beads.

Nafisa's beads are 10% blue, one quarter white, one in five are red and 0.3 of total number of beads are purple. Nafisa has 45 yellow beads.

- Who has the most beads? How do you know?
 - What colour of bead is the most popular with the two girls?
 - How many beads are there altogether?
- 14.** Order these from smallest to largest:

0.4 0.15 24%
 $\frac{2}{7}$ 42% $\frac{3}{4}$ $\frac{4}{5}$ $\frac{4}{9}$ 74%
 0.45 0.33 51%

- 15.** Four friends share a pizza. Tracy ate 35% of the pizza. Alice ate 0.4 of the pizza. Oliver ate $12\frac{1}{2}\%$.
- Imran ate the remaining pizza. How much did Imran eat?
 - Who ate the most pizza? The boys or the girls?
- 16.** In a history test, Adrian scored 73% and Betty got four fifths of the questions correct. Who scored the most? How do you know?
- 17.** Danny needs to type one quarter into his calculator. How could he do this? Explain two ways.
- 18.** In January, Rahima saves 20% of her £20 pocket money. In February, she saves 0.4 of £10 pocket money. In March, she saves two-fifths of her £30 and in April, she manages to save a further £8.72. How much does Rahima save altogether?
- 19.** Zohir went to a shop and bought a packet of light bulbs. They cost him £11.75. Two weeks later, he returned to the same shop and saw the same packet, but this time the price had risen by 30%. What is the new price?

20. Use the digits, 1, 2 or 3 to fill in the missing digits below:

$$\frac{\square}{8} = 0.\square25 = \square2.5\%$$

$$\frac{\square}{5} = 0.\square = 20\%$$

$$\frac{\square}{8} = 0.\square75 = \square7.5\%$$

21. Calculate:

- a. 60% of 248
- b. 74% of 820
- c. 30% of 180
- d. 75% of 288
- e. $17\frac{1}{2}\%$ of 250

22. Find:

- a. 40% of 5m
- b. 25% of 17m
- c. 65% of £1899
- d. 30% of 4 hours
- e. 15% of 1 day

23. Daniel has spent 45 minutes doing his homework so far. This is 30% of the time he needs to spend doing his homework. How long must he spend doing it altogether?

24. Asif and Hannah have completed 40% of their homework. It has taken them 30 minutes so far. How much longer should they have to spend on their work?

25. Increase:

- a. £40 by 65%
- b. £315 by 30%
- c. £255 by 87%

26. Decrease:

- a. £100 by 15%
- b. £2819 by 30%
- c. £4817 by 52%
- d. 18292 by 43%
- e. 4921 by 39%

Example:

Simple Interest: Simple interest is the amount that you pay if you wish to borrow an amount of money over a fixed period of time. It is a one off payment.

$$SI = \frac{PRT}{100}$$

Where SI – Simple Interest (The amount paid in interest);

P – Principal (The amount borrowed or leant);

R – The rate of interest in terms of percentage;

T – The time that the money is in the bank.

Muneeb leaves £250 in his bank account for two and a half years. He is paid at a rate of 3.5%. How much interest does he earn?

$$SI = \frac{PRT}{100}$$

$$SI = \frac{250 \times 3.5 \times 30}{100 \times 12}$$

Note: two and a half years is 30 months so instead of putting 2.5 years, I have put 30 on the top and then divided it by 12 on the bottom to convert years to months.

$$SI = \frac{26250}{1200}$$

$$SI = 21.875$$

So Muneeb will have earned £21.87 in interest payments.

- 27.** Sally leaves £375 in her bank account for 5 years. Each year, she is paid interest (which will affect her principal amount). Her bank pays a rate of 4%. How much money does she have in her bank account at the end of each year?
- 28.** Nasir buys a car for £3,500. He has two years free grace, where he does not have to make any payments, but at the end of the two years, he has to pay his loan off completely. The loan company charge an interest rate of 11%. How much money does he have to pay them altogether at the end of the two year term?

- 29.** Sara has £500. Bank A offer her a rate of 3.4% over 3 years whilst Bank B offers to give her £20 and then pay her a rate of 2.9% over the three years. With which bank should she invest her money?
- 30.** Calculate the amount of interest for each of the following:
- £600 is deposited in a bank paying 1.1% interest. How much interest is paid after two years?
 - £8000 is deposited in a bank paying 1.9% interest. How much interest is paid after five years?
 - £8190 is deposited in a bank paying 2.1% interest. How much interest is paid after two years?

Compound Interest

$$CI = PR^T$$

- 31.** An oak tree is 8m high. It grows at a rate of 6% per year. A pine tree is 5m high. It grows at a rate of 10% each year. How long will it take for the two trees to be the same size?
- 32.** Alison buys a house for £150,000. Her mortgage rate is 3.2%. Interest is added on a daily basis. How much interest is added to her mortgage in the first thirty days of her having bought the house?
- 33.** In the grand prix, two cars, one red and the other blue, race against each other. The red car starts the final lap at 200mph but increases its speed at a rate of 0.3% each second. The blue car starts the final lap at exactly the same time as the red one, but is travelling at 180mph and increases its speed at rate of 0.45% each second.
- How long, in time, will it take for both cars to end up at the same speed?
 - If the lap lasts for 1 minute 20 seconds, which car would be travelling the faster and by how much at that point?
- 34.** Calculate the answers to the following:
- $415.73 \times 8.92 =$
 - $71.918 \times 9.721 =$
 - $5604.3 \times 4.2 =$
 - $8.392 \times 39.7 =$
 - $2819.9303 \div 4 =$
 - $3829.391 \div 0.7 =$
 - $9371.763 \div 1.8 =$
 - $4829.28 \div 0.02 =$
 - $3728 + 37.881 + 28.33 + 8.3 =$
 - $28 + 2813 + 8422.18 + 83.3 =$
 - $(183 \times 7.9) - 293.193 =$
 - $(129 \times 8.101) - (8193 \div 3.2) =$

35. Draw a table like the one below and sort the pairs of fractions into the correct places:

Same Denominator	Related Fractions	Unrelated Fractions

$$\frac{2}{3} \quad \frac{5}{9} \quad \frac{5}{6} \quad \frac{3}{6} \quad \frac{5}{8} \quad \frac{7}{8}$$

$$\frac{2}{7} \quad \frac{4}{7} \quad \frac{4}{7} \quad \frac{1}{2} \quad \frac{0}{6} \quad \frac{1}{6}$$

$$\frac{3}{9} \quad \frac{2}{3} \quad \frac{7}{9} \quad \frac{5}{6} \quad \frac{4}{5} \quad \frac{5}{6}$$

$$\frac{3}{4} \quad \frac{5}{8} \quad \frac{7}{4} \quad \frac{5}{12} \quad \frac{4}{7} \quad \frac{5}{6}$$

36. Use the most efficient method you can to add each pair of fractions.

37. Identify the quarters below:

