Mental methods (1)

- Using facts you know to answer unfamiliar questions

Keywords

You should know

You should answer the questions in this topic without using a calculator.

explanation 1

1 Write these fractions as decimals.

a $\frac{1}{5}$ **b** $\frac{3}{4}$ **c** $\frac{7}{20}$ **d** $\frac{6}{25}$

e $\frac{3}{8}$ **f** $\frac{4}{5}$ **g** $\frac{1}{3}$ **h** $\frac{9}{10}$

i $\frac{2}{3}$ **j** $\frac{1}{6}$ **k** $\frac{2}{5}$ **l** $\frac{7}{8}$

2 Use your answers to question **1** to write each fraction as a percentage.

3 Change these percentages to decimals.

a 13% **b** 45% **c** 5% **d** 84%

e 36% **f** 72% **g** 12.5% **h** 6.5%

4 Write each percentage in question **3** as a fraction. Give each answer in its simplest form.

explanation 2a explanation 2b explanation 2c

5 Calculate these percentages.

a 10% of 64 **b** 20% of 64 **c** 5% of 64 **d** 25% of 64

e 10% of 52 **f** 5% of 52 **g** 25% of 52 **h** 45% of 52

6 Work out the following percentages.

a 15% of £38 **b** 35% of 72 kg **c** 21% of £62 **d** 43% of 56 litres

e 64% of 39 km **f** 72% of 3 m **g** 5% of 20 hours **h** 3% of 15 g

7 The prices shown do not include VAT.

£200

£550

£120

a Work out the VAT, at a rate of 17.5%, for each item.

b Find the total cost of each item, including VAT.

8 In a sale all items are reduced by 15%. For each item calculate these values.

i The amount of the reduction **ii** The sale price

a trainers costing £45 before the sale

b tennis racquet costing £38 before the sale

c football costing £16 before the sale

d hockey stick costing £55 before the sale

explanation 3 online

9 Copy and complete this table.

3	×	4	=	
2	×	4	=	
1	×	4	=	
0.1	×	4	=	
0.2	×	4	=	
0.3	×	4	=	

10 Use the fact that $8 \times 4 = 32$ to answer the following questions.

a 8×0.4 **b** 0.8×4 **c** 0.8×0.4

d 80×4 **e** 80×0.4 **f** 0.8×400

g 80×40 **h** 8×0.04 **i** 80×0.04

11 Use the fact that $9 \times 7 = 63$ to answer these questions.

a 0.9×7 **b** 0.9×0.7 **c** 9×0.7

d 9×0.07 **e** 90×7 **f** 9×700

g 0.09×7 **h** 90×0.7 **i** 0.09×700

12 Use the answer to the first division in each row to work out the other divisions in the row.

a $20 \div 4$ **b** $2 \div 4$ **c** $0.2 \div 4$ **d** $0.02 \div 4$

e $60 \div 5$ **f** $6 \div 5$ **g** $0.6 \div 5$ **h** $0.06 \div 5$

i $18 \div 2$ **j** $1.8 \div 2$ **k** $0.18 \div 2$ **l** $0.018 \div 2$

m $10 \div 4$ **n** $1 \div 4$ **o** $0.1 \div 4$ **p** $0.01 \div 4$

13 Copy and complete.

a $0.2 \times \square = 6$ **b** $4 \times \square = 0.8$

c $0.1 \times \square = 0.4$ **d** $3 \div \square = 3$

e $\square \div 5 = 0.2$ **f** $10 \div \square = 0.5$

14 Make 36 using the digits 1, 3 , 3 and 5 once, together with any combination of the symbols +, −, ×, ÷ and brackets.

15 Andy was born in 1982. Using the digits of that year, in any order, together with any combination of the symbols +, −, ×, ÷ and brackets, how many numbers between 1 and 30 can you make?