(c) In a sale, all prices are reduced by 24%.   → $100\% - 24\% = 76\%$
Victor pays $36.86 for a pair of shoes in the sale.

Calculate the original price of the shoes.

$$0.76 \times x = 36.86$$

$$x = \frac{36.86}{0.76}$$

$$= 48.5$$

$ ....48.50........ [2]

(iii) Last year, the mean mass of pears produced was 54 kg per tree.
This was a decrease of 10% on the mean mass of pears produced per tree from the year before.
$100\% - 10\% = 90\%$
Calculate the mean mass of pears produced by each pear tree the year before.

$$0.9 \times x = 54$$

$$x = \frac{54}{0.9}$$

$$= 60$$

........60........ kg [2]

(d) The cost of a railway magazine increases by 12.5% to $2.70 .
↳ $100\% + 12.5\% = 112.5\%$
Calculate the cost of the magazine before this increase.

$$1.125 \times x = 2.70$$

$$x = \frac{2.70}{1.125}$$

$ ....2.40........ [2]

$$= 2.4$$

16 The selling price of a shirt is $26.50 .
This includes a tax of 6%. ↳ 100% + 6% = 106%

Calculate the price of the shirt before the tax was added.

$$1.06 \times x = 26.50$$
$$x = \frac{26.50}{1.06}$$
$$= 25$$

$ .... 25 .... [2]

15 The cost of a train journey is increased by 6% to a new cost of $153.70 .
↳ 100% + 6% = 106%

Calculate the original cost of the train journey.

$$1.06 \times x = 153.70$$
$$x = \frac{153.70}{1.06}$$
$$= 145$$

$ .... 145 .... [2]

12 Oliver sent 22% more messages in June than in May. 100% + 22% = 122%
He sent 305 messages in June.

Find how many more messages he sent in June than in May.

$$1.22 \times x = 305$$
$$x = \frac{305}{1.22}$$
$$= 250$$

.... 250 .... [3]

10 When Jack sells a computer for $264 he makes a profit of 20%. → 120%

Work out the price Jack paid for the computer.

$$1.2 \times x = 264$$
$$x = \frac{264}{1.2}$$
$$= 220$$

$ ....220........................ [2]

9 A shop has a sale and all prices are reduced by 20%. → 80%

(a) The original price of a shirt is $16.

Find the sale price of the shirt.

$$16 \times 0.8 = 12.8$$

$ ....12.80.......... [2]

(b) The sale price of a dress is $40.

Find the original price of the dress.

$$0.8 \times x = 40$$
$$x = \frac{40}{0.8}$$
$$= 50$$

$ ....50.............. [2]

(c) Arno buys a student ticket for $43.68 .
This is a saving of 16% on the full price of a ticket.
↳ 84%

Calculate the full price of a ticket.

$$0.84 \times x = 43.68$$
$$x = \frac{43.68}{0.84}$$

$$= 52$$

$ ....52.......... [2]

(d) Arjun earned $36 515 in 2019.
This was an increase of 9% on his earnings in 2018.
↳ 109%

Work out his earnings in 2018.

$$1.09 \times x = 36\,515$$

$$x = \frac{36\,515}{1.09}$$

$$= 33\,500$$

$ ....33 500........ [2]

(b) In September the total income at the campsite was $37 054.
This was a decrease of 4.5% on the total income in August.
↳ 95.5%

Calculate the total income in August.

$$0.955 \times x = 37\,054$$

$$x = \frac{37\,054}{0.955}$$

$$= 38\,800$$

$ ....38 800........ [2]

(b) In 2019, a packet of pasta cost $2.40.
This was an increase of 25% of the cost of a packet in 2018.
↳ 125%

(i) Work out the cost in 2018.

$$1.25 \times x = 2.40$$

$$x = \frac{2.40}{1.25}$$

$$= 1.92$$

$ ....1.92........ [2]

(d) In 2024, the company had total sales of $52 million.
This was an increase of 30% on the total sales for 2023.
↳ 130%

Work out the total sales in 2023.

$$1.3 \times x = 52$$

$$x = \frac{52}{1.3}$$

$$= 40$$

$ ....40........ million [2]

(d) In another week Dinari sells fruit and vegetables for $1738.
He makes a profit of 10%. → 110%.

Calculate the amount he paid for the fruit and vegetables in that week.

$$1 \cdot 1 \times x = 1738$$
$$x = \frac{1738}{1 \cdot 1}$$
$$= 1580$$

$ ....1580........ [2]

(ii) The fuel tank in the new car has a capacity of 45 litres.
This is 72% of the capacity of the fuel tank in her old car.

Calculate the capacity of the fuel tank in her old car.

$$0 \cdot 72 \times x = 45$$
$$x = \frac{45}{0 \cdot 72}$$
$$= 62 \cdot 5$$

........62·5........ litres [2]

(iii) In 2023 there were 120 members.
This was a decrease by 4% of the number of members in 2022.
↳ 96%.

Calculate the number of members in 2022.

$$0 \cdot 96 \times x = 120$$
$$x = \frac{120}{0 \cdot 96}$$
$$= 125$$

........125........ [2]

(b) Chao collects $47.50 for charity.

   (i) Bob collects 28% more than Chao. → 128%

     Find the amount Bob collects.

$$1.28 \times 47.5 = 60.80$$

$\qquad\qquad\qquad\qquad\qquad$ \$ _____ 60.80 _____ [2]

   (ii) Chao collects 60% less than Mei. → 100% - 60% = 40%

     Find how much more money Mei collects than Chao.

$$0.4 \times x = 47.50$$
$$x = \frac{47.50}{0.4}$$
$$= 118.75$$

$\qquad\qquad\qquad\qquad$ \$ _____ 118.75 _____ [3]

17 Adil and Brian are paid the same wage.
Adil is given a 7% pay decrease and his new wage is $427.80 . → 93%
Brian is given a 7% pay increase. → 107%

Work out Brian's new wage.

Adil's old wage:
$$0.93 \times x = 427.80$$
$$x = \frac{427.80}{0.93}$$
$$= 460$$

Brian's new wage: $1.07 \times 460 = 492.2$ \$ _____ 492.20 _____ [3]