③ Percentage of a Quantity
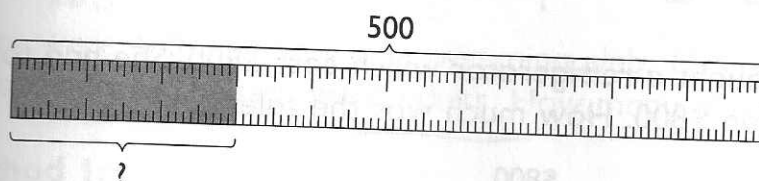
There were 500 people at a concert. 30% of them were children. How many children were there at the concert?

Method 1:

500

?

$(.01)(500) = 5$

$1\% \text{ of } 500 = \dfrac{500}{100} = 5$

> 30% of the whole is shaded.

$30\% \text{ of } 500 = 5 \times 30$

$\quad\quad\quad\quad = \blacksquare \ 150$

There were ■ 150 children at the concert.

Method 2: *faster*

$30\% \text{ of } 500 = \dfrac{30}{100} \times 500$

> $30\% = \dfrac{30}{100}$

$\quad\quad\quad\quad = \blacksquare \ 30 \times 5 = 150$
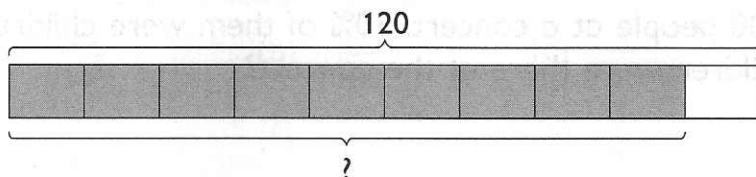
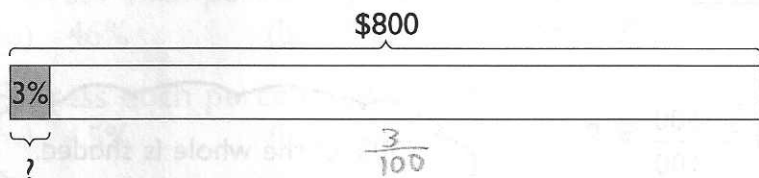There were ■ children at the concert.

150

1. 120 students took part in a physical fitness test. 90% of them passed the test. How many students passed the test?

$$120$$

?

90% of 120 = ■ $.9 \times 120 = \frac{9}{10} \cdot \frac{120}{1} = 9 \cdot 12 = 108$ students

2. Lindsey bought a refrigerator which cost $800. She had to pay 3% sales tax on $800. How much was the sales tax?

$800

3%

? $\frac{3}{100}$
       "

3% of $800 = $■ $.03 \times 800 = 3 \cdot 8 = 24$

3. Find the value of
   (a) 5% of 300   (b) 8% of 200   (c) 20% of 50 kg
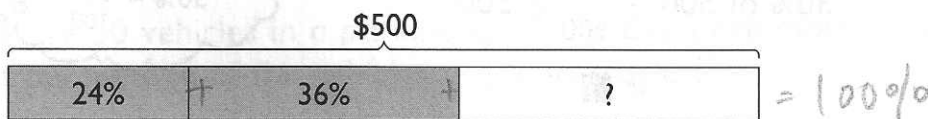   (d) 25% of 40 m   (e) 45% of 70 km   (f) 75% of 400 g

4. William had $500. He spent 24% of his money on transport and 36% on food.
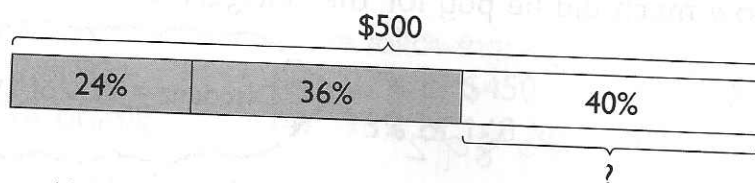   (a) What percentage of his money was left?

$500

| 24% | 36% | ? |

= 100%

1 whole is 100%.

$100\% - 24\% - 36\% = 40\%$

■% of his money was left.

40%

34

(b) How much money was left?

$$\$500$$

| 24% | 36% | 40% |

$$40\% \times \$500 = \$\blacksquare \quad .4\,(500) = 4\cdot50 = \overset{\$}{200}$$

$$\$\blacksquare \text{ was left.} \qquad \frac{4}{10}$$

200

5. There were 400 members in a swimming club. 12% of the members were children. The rest were adults. How many adults were there?

Method 1:

total − Children = Adults

$$100\% - 12\% = 88\%$$

88% of the members were adults.

$$88\% \times 400 = \blacksquare \qquad \frac{88}{100} \times 400 = 352 \text{ Adults}$$

There were $\blacksquare$ adults. *or* $.88 \times 400$

352 adults → *check : 12% of 400 = children*

$$\frac{12}{100}(400) = 48 \text{ children}$$

Method 2:

Number of children = 12% × 400 = 48

Number of adults = 400 − 48 = $\blacksquare$

352

$$\begin{array}{r} 352 \\ + 48 \\ \hline 400 \text{ total} \end{array}$$

Workbook Exercise 22

6. Ahmad has $2700 in a savings bank. The interest rate is 3% per year. How much money will he have in the bank after 1 year?
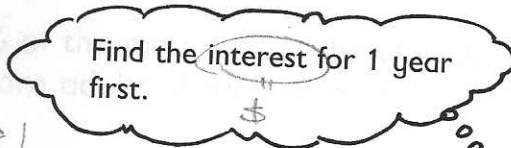
$$\frac{3}{100}(\$2700) = \frac{3\,(27)}{} = \$81$$

Find the interest for 1 year first.

Interest = 3% of $2700 = $\blacksquare$ *$81*

Amount of money in the bank after 1 year

= $2700 + Interest *($81)*

= $\blacksquare$ *2781*

7. A man bought a refrigerator at a discount of 12%. Its usual price was $900. How much did he pay for the refrigerator?

total − discount = Sales
$
$900 − $108 = $892

> Discount = 12% of $900
> 108 = 12.9 = $\frac{12}{100} \cdot 900$

Discount = $ 108

Amount of money paid = $900 − Discount

= $ 892

8. Jason's monthly salary was $1500 in May. It was increased by 8% in June. What was his salary in June?

> Increase = 8% of $1500

$120 = $8.15 = $\frac{8}{100}(1500)$

Increase in salary = $ 120

Salary in June = $1500 + Increase $120

= $ 1620

9. There were 400 members in a chess club last year. The membership was decreased by 5% this year. How many members are there this year?

> Decrease = 5% of 400
> 20 = $\frac{5}{100}(400)$

Decrease = 20

Number of members this year = 400 − Decrease   20

= 380

PRACTICE 2B

1. Find the value of each of the following:
   (a) 8% of 82
   (b) 27% of $450
   (c) 33% of 100
   (d) 40% of 308
   (e) 75% of 148 kg
   (f) 62% of 520 m

2. There are 1200 people living in a small town. 45% of them are children. How many children are there?

3. The area of a garden is 60 m². 7% of it is taken up by a pond. What is the area of the pond?

4. There were 50 words in a spelling test. Sally spelled 90% of them correctly. How many words did she spell correctly?

5. There are 20 workers in a library. 55% of them are females. How many male workers are there?

6. Tasha earns $1350 monthly. She saves 30% of the money. How much does she save each month?

7. A swimming club had 720 members last year. This year the membership increased by 5%. Find the number of members this year.

8. Mary bought a swimsuit which cost $50. In addition, she had to pay 3% sales tax. How much did she pay for the swimsuit?

9. The usual price of a camera was $190. At a sale, it was sold at a discount of 30%. What was the sale price?

10. Mrs. Meier deposited $3500 in a bank. The bank paid 3% interest per year. How much money did she have in the bank after 1 year?

11. Travis shot 15 arrows. 40% of the arrows hit the target. How many arrows did not hit the target?

12. A library has a reading club. 30% of the members of the club are boys, 40% are girls and the rest are adults. If there are 280 members, how many of them are adults?

13. There are 200 spaces in a parking lot. 10% are for vans, 75% are for cars and the rest are for motorcycles. How many spaces are for motorcycles?