Unit 33 : Measures

1. M/J 16/P11/Q5

Stella walks to a park.
For 4 minutes she walks at a rate of 80 steps per minute.
For 1 minute she walks at a rate of 120 steps per minute.

Find the mean number of steps per minute she takes. **[2]**

2. M/J 16/P11/Q20

The number of goals scored in each of 50 football matches was recorded.
The results are given in the table.

Number of goals scored	0	1	2	3	4	5	6
Frequency	16	11	9	7	6	0	1

For these results, find

(a) the mode, **[1]**

(b) the median, **[1]**

(c) the mean. **[2]**

3. M/J 15/P12/Q22

The scale of a map is $1 : 25\,000$.

(a) The scale can be written as $1\text{ cm} : d\text{ km}$.
Find d. **[1]**

(b) The distance between two villages is 8 km.
Find the distance, in centimetres, between the two villages on the map. **[1]**

(c) The distance between the peaks of two mountains is measured on the map as 76 mm.
Calculate the distance, in kilometres, between the two peaks. **[2]**

4. O/N 13/P11/Q11

A model of a car is made to a scale of $\frac{1}{40}$.

(a) The height of the actual car is 1.5 m.
Find the height, in **centimetres**, of the model. **[1]**

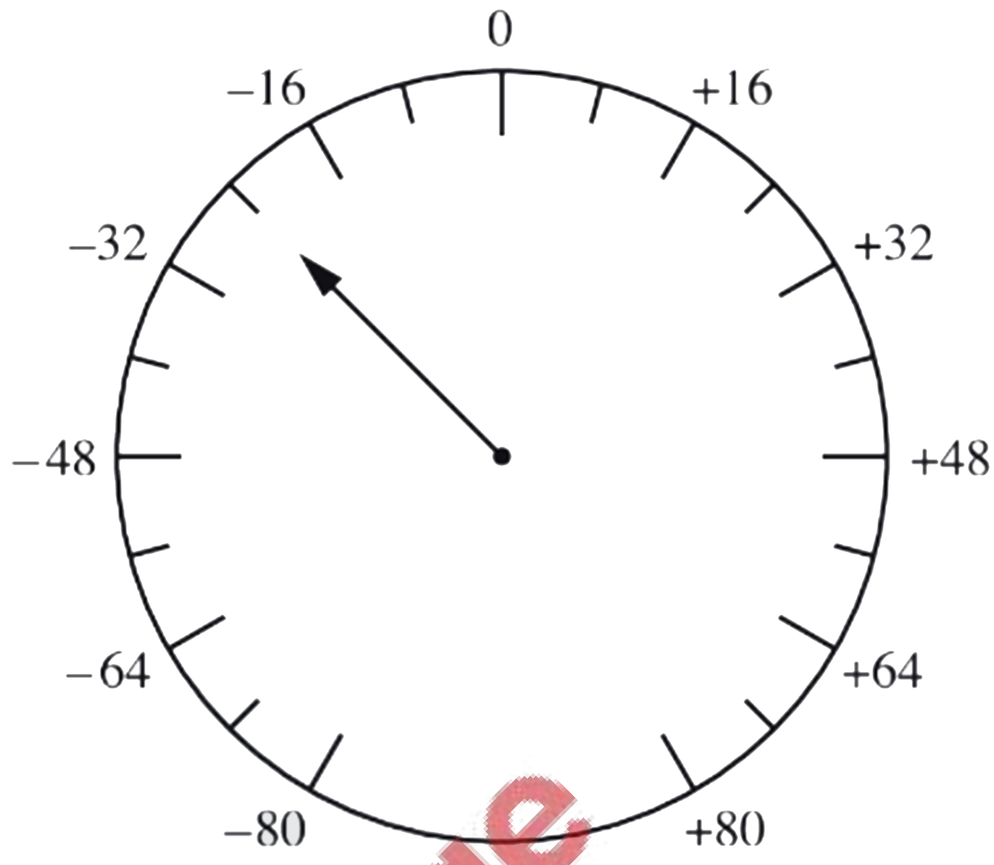
(b) The luggage capacity of the model is 5 millilitres.
Find the luggage capacity, in **litres**, of the actual car. **[2]**

5. O/N 11/P11/Q4/b

(a) The mass of a bag of sugar is given as 1.5 kg, correct to the nearest tenth of a kilogram.
Write down the upper bound of this mass, giving your answer in grams. **[1]**

6. M/J 11/P11/Q5

An instrument is used to measure the height of an object above sea level.
The height, in metres, is shown on the dial.

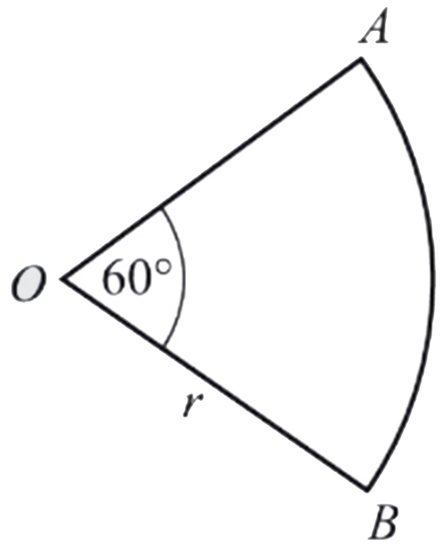


(a) What is the reading on the dial? **[1]**

(b) The object moves from position A, where the dial reads −54, to position B, where the dial reads + 48.
What is the difference in height between A and B? [1]

7. M/J 10/P12/Q18

OAB is the sector of a circle of radius r cm.
$A\hat{O}B = 60°$.



Find, in its simplest form, an expression in terms of r and π for

(a) the area of the sector, **[1]**

(b) the perimeter of the sector. **[2]**

8. M/J 09/P01/Q8/a

(a) Convert 0.8 kilometres into millimetres. [1]

9. O/N 08/P01/Q11

A rectangular box has dimensions 30 cm by 10 cm by 5 cm.
A container holds exactly 100 of these boxes.

(a) Calculate the total volume, in cubic metres, of the 100 boxes. **[1]**

(b) Each box has a mass of 1.5 kg to the nearest 0.1 kg.
The empty container has a mass of 6 kg to the nearest 0.5 kg.
Calculate the greatest possible **total** mass of the container and 100 boxes. **[2]**

10. O/N 08/P01/Q19/b

Every month a salesman's pay is made up of a fixed amount plus a bonus.
The bonus is a percentage of his monthly sales.

(a) In 2007 the fixed amount was \$3500 per month and the bonus was 5% of his monthly sales.

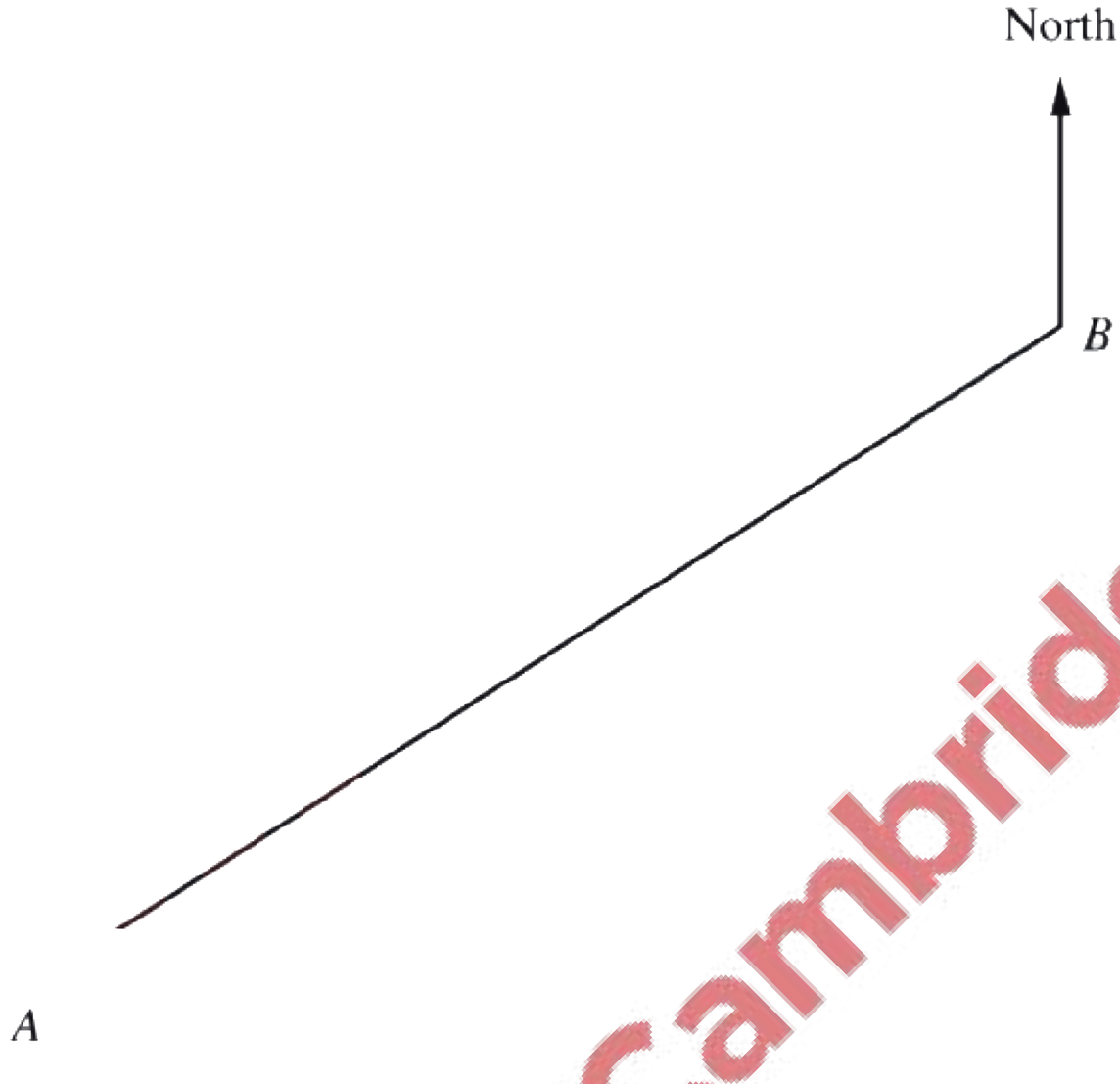
In July his sales were \$12 000.
Calculate the salesman's pay for July. **[2]**

11. M/J 08/P01/Q23/a

A map is drawn to a scale of 1 cm to 3 km.
The diagram below shows the positions of two villages A and B on the map.

(a) (i) Write the scale in the form $1 : n$. [1]

(ii) Find the actual distance, in kilometres, between the villages A and B. **[1]**



Answers Section

1. M/J 16/P11/Q5

88 **2**

2. M/J 16/P11/Q20

(a) 0 **1**

(b) 1 **1**

(c) 1.6 oe **2**

3. M/J 15/P12/Q22

(a) 0.25 **1**

(b) 32 **1**

(c) 1.9 **2**

4. O/N 13/P11/Q11

(a) 3.75, or $3\frac{3}{4}$, only **1**

(b) 320 **2**

5. O/N 11/P11/Q4/b

(a) 1550 **1**

6. M/J 11/P11/Q5

(a) –24 **1**

(b) 102 **1**

7. M/J 10/P12/Q18

(a) $\frac{\pi r^2}{6}$ **1**

(b) $2r + \frac{\pi r}{3}$ **2**

8. M/J 09/P01/Q8/a

(a) 800 000 **1**

9. O/N 08/P01/Q11

(a) 0.15 o.e. **1**

(b) 161.25 **2**

10. O/N 08/P01/Q19/b

(a) 4100 **2**

11. M/J 08/P01/Q23/a

(a) (i) (1 :) 300 000 **1**

(ii) 30 (km) **1**