

Revision Test 2

Duration: 1 hour

30

1. The equation of a straight line l is $2x - y + 6 = 0$. The line cuts the x -axis at point A and passes through point $B(1, p)$.

Find

- (a) the gradient of line l ,
- (b) the coordinates of A ,
- (c) the value of p ,
- (d) the exact length of line segment AB ,
- (e) the equation of the line which passes through B and parallel to x -axis.

Answer (a) _____ [1]

(b) $A = \left(\quad , \quad \right)$ [1]

(c) $p =$ _____ [1]

(d) $AB =$ _____ units [2]

(e) _____ [1]

2. Answer the whole of this question on a sheet of graph paper.

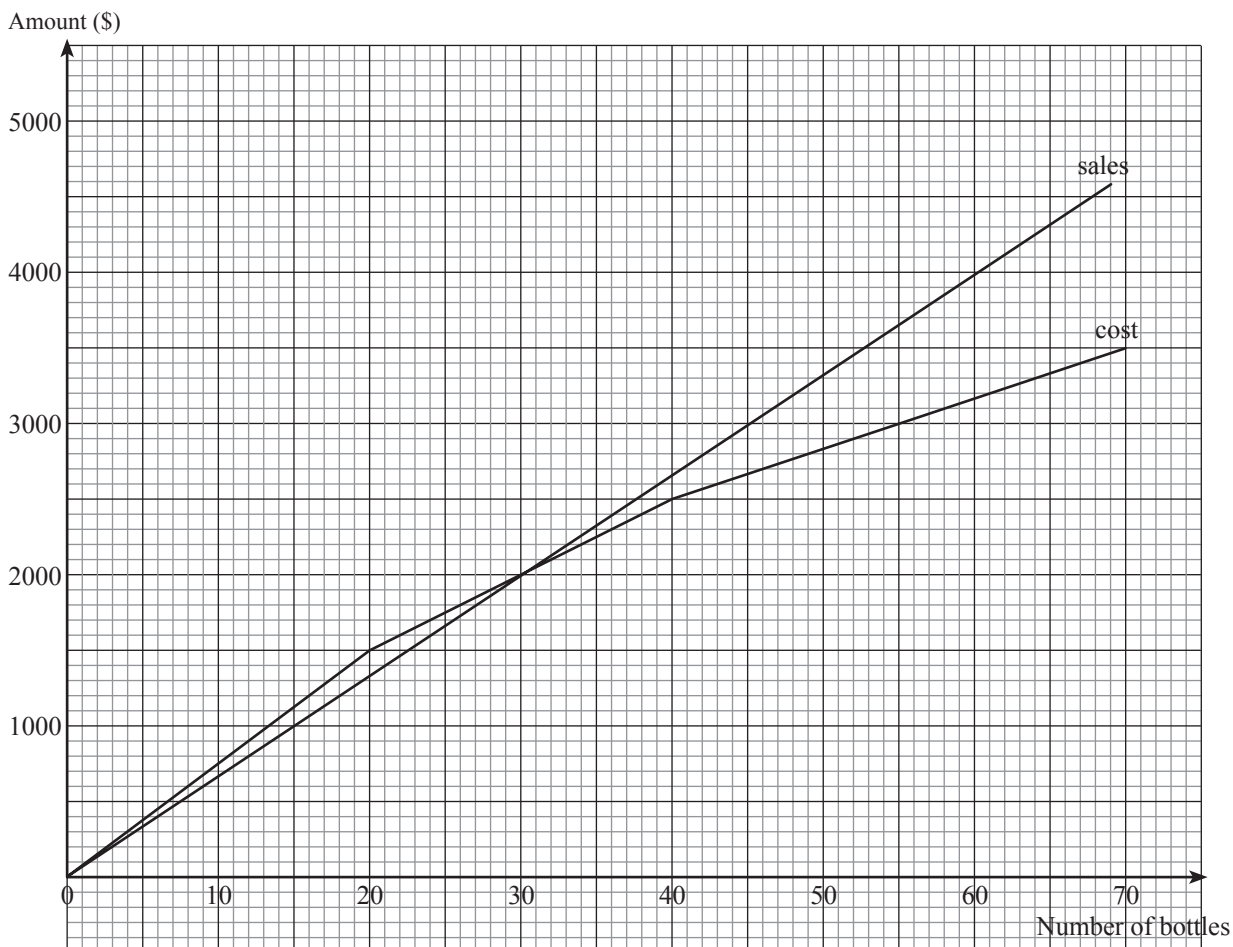
The table below gives some values of t and the corresponding values of v , correct to 1 decimal place, where

$$v = 2(4.5 - t)(1.8 + t).$$

t	-2	-1	0	1	2	3	4	5	6
v	-2.6	8.8	p	19.6	19.0	14.4	5.8	-6.8	-23.4

- (a) Find the value of p . [1]
- (b) Using a scale of 2 cm to 1 unit, draw a horizontal axis for $-2 \leq t \leq 6$.
Using a scale of 2 cm to 4 units, draw a vertical axis for $-24 \leq v \leq 20$.
On your axes, plot the points given in the table and join them with a smooth curve. [3]
- (c) Use your graph to find
- (i) the value of v when $t = -0.8$, [1]
 - (ii) the positive value of t when $v = 2.4$, [1]
 - (iii) the greatest value of v . [1]
- (d) Draw the line of symmetry. [1]

3. The graph shows the costs of production and the amount received from the sales of home-made wine.



Find

- the cost of production, in dollars, of 55 bottles of wine,
- the amount received, in dollars, from the sales of 18 bottles of wine,
- the least number of bottles of wine to be sold to make profit,
- the profit made from selling 67 bottles of wine,
- the maximum possible loss of the production.

Answer (a) \$ _____ [1]

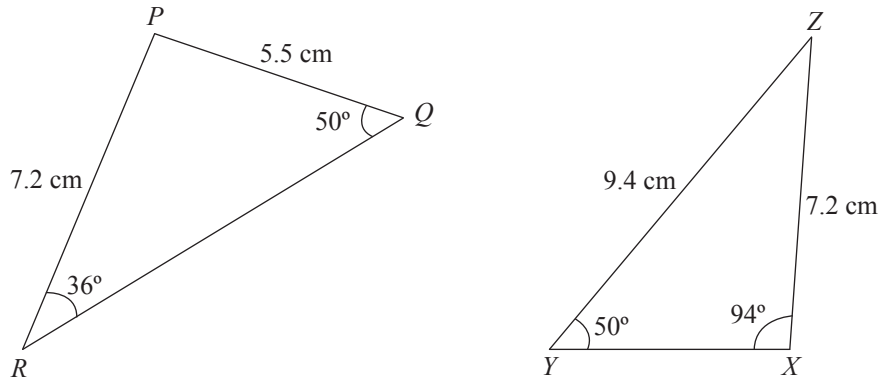
(b) \$ _____ [1]

(c) _____ [1]

(d) \$ _____ [2]

(e) \$ _____ [2]

4. The diagram shows two triangles, PQR and XYZ .
 Given that $PQ = 5.5$ cm, $PR = XZ = 7.2$ cm, $YZ = 9.4$ cm, $\angle PRQ = 36^\circ$, $\angle YXZ = 94^\circ$
 and $\angle PQR = \angle XYZ = 50^\circ$.



- (a) Find $\angle QPR$.
 (b) Explain why triangles PQR and XYZ are congruent.
 (c) Find the length of QR .

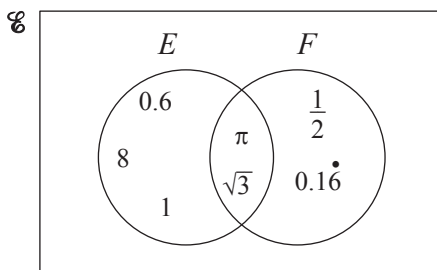
Answer (b)

[2]

Answer (a) $\angle QPR = \underline{\hspace{2cm}}$ $^\circ$ [1]

(c) $QR = \underline{\hspace{2cm}}$ cm [1]

5. The Venn diagram shows the sets E and F with their members.



- (a) Write down, as simply as possible, the set notation which represents the set that contains irrational numbers only.
- (b) Find the value of $n(E \cap F')$.

Answer (a) _____ [1]

(b) _____ [1]

6. Two coins, X and Y , are each thrown 10 times.
The matrices show the numbers of head and tail obtained and the scores awarded.

	Head	Tail		Scores
X	3	a	Head	4
Y	6	4	Tail	1

- (a) Write down the value of a .
- (b) Using your answer in (a), evaluate $\begin{pmatrix} 3 & a \\ 6 & 4 \end{pmatrix} \begin{pmatrix} 4 \\ 1 \end{pmatrix}$.
- (c) Explain what your result obtained from (b) represents.

Answer (a) $a =$ _____ [1]

(b) _____ [1]

(c) _____ [1]

–End–

Solutions to Revision Test 2

1. (a) $2x - y + 6 = 0$
 $y = 2x + 6$
 \therefore Gradient = 2 [1]
- (b) At x -axis, $y = 0$
 $2x + 6 = 0$
 $x = -3$
 \therefore Coordinates of $A = (-3, 0)$ [1]
- (c) At $B(1, p)$, $p = 2(1) + 6$
 $= 8$ [1]
- (d) $AB = \sqrt{(-3 - 1)^2 + (0 - 8)^2}$ [1]
 $= \sqrt{80}$ units [1]
- (e) Equation of line // to x -axis, $y = c$
 $\therefore y = 8$ [1]
2. (a) $p = 2(4.5 - 0)(1.8 + 0)$
 $= 16.2$ [1]
- (b) (See diagram on page S2)
- | Remarks |
|--|
| Award 1 mark for all points accurately plotted. |
| Award 1 mark for labelling of <u>both axes</u> . |
| Award 1 mark for smooth curve. |
- (c) (i) From the graph, when $t = -0.8$,
 $v \approx 10.8$ [1]
- (ii) From the graph, when $v = 2.4$,
 $t \approx 4.3$ [1]
- (iii) From the graph, greatest $v \approx 19.8$ [1]
- (d) (See diagram on page S2) [1]
3. (a) From the graph, cost of production
 $\approx \$3000$ [1]
- (b) From the graph, total sales $\approx \$1200$ [1]
- (c) From the graph, break even \Rightarrow 30 bottles [1]
 minimum no. of bottle = 31
- (d) From the graph, profit $\approx \$4450 - \3400 [1]
 $= \$1050$ [1]
- (e) From the graph, maximum loss
 $\approx \$1500 - \1350 [1]
4. (a) $\angle QPR = 180^\circ - 36^\circ - 50^\circ$ (\angle sum of Δ)
 $= 94^\circ$ [1]
- (b) $\angle PQR = \angle XYZ = 50^\circ$ (given) [1]
 $\angle QPR = \angle YXZ = 94^\circ$
 $PR = XZ = 7.2$ cm (given)
 $\therefore \Delta PQR \equiv \Delta XYZ$ (AAS) [1]
- (c) Since $\Delta PQR \equiv \Delta XYZ$,
 $QR = YZ$
 $= 9.4$ cm [1]
5. (a) $E \cap F$ [1]
- (b) $n(E \cap F') = 3$ [1]
6. (a) Total throw = 10
 $3 + a = 10$
 $a = 7$ [1]
- (b) $\begin{pmatrix} 3 & 7 \\ 6 & 4 \end{pmatrix} \begin{pmatrix} 4 \\ 1 \end{pmatrix} = \begin{pmatrix} 12 + 7 \\ 24 + 4 \end{pmatrix}$
 $= \begin{pmatrix} 19 \\ 28 \end{pmatrix}$ [1]
- (c) The total scores awarded to X and Y are 19 and 28 respectively. [1]

2. (b), (d)

