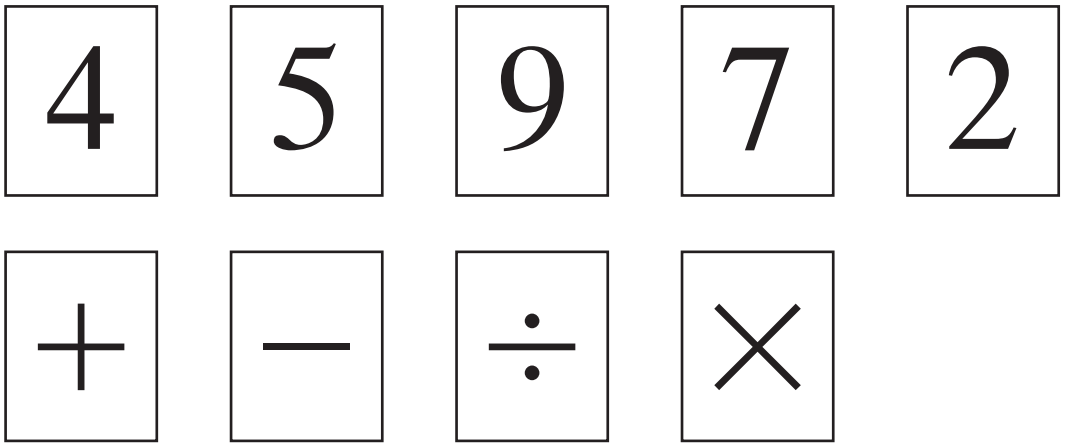
## 1 STARTER

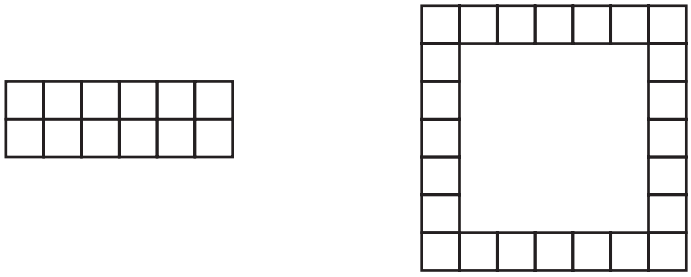



## EXERCISE 1.4, Q1

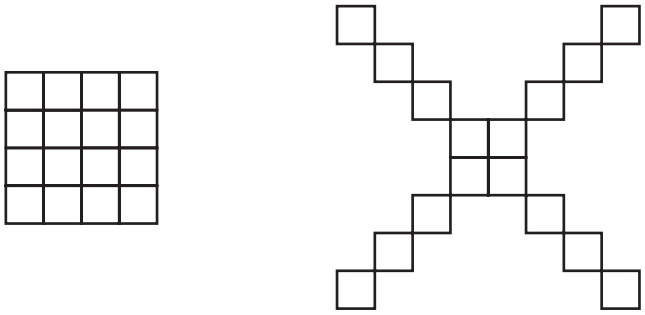
| × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **1** | 1 | 2 | 3 | 4 | 5 | 6 | | | | |
| **2** | 2 | 4 | 6 | 8 | 10 | | | | | |
| **3** | 3 | 6 | 9 | 12 | | | | | | |
| **4** | 4 | 8 | 12 | | | | | | | |
| **5** | 5 | 10 | | | | | | | | |
| **6** | 6 | 12 | | | | | | | | |
| **7** | 7 | 14 | | | | | | | | |
| **8** | 8 | | | | | | | | 72 | |
| **9** | 9 | | | | | | | 72 | | |
| **10** | 10 | | | | | | | | | |

## 2 STARTER

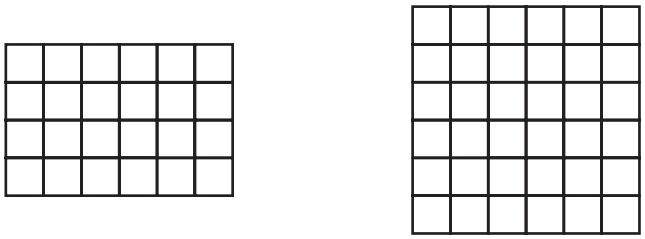
**1**



**2**

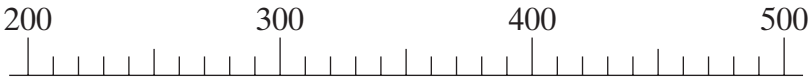


**3**

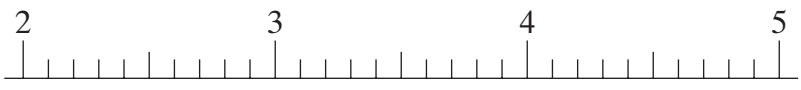


## EXERCISE 3.6

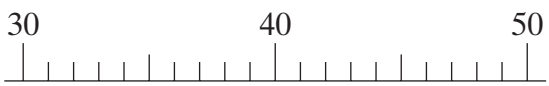
**3** **c)**




**d)**

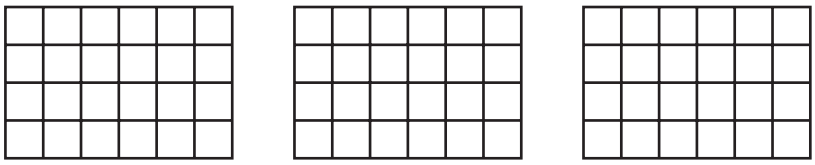


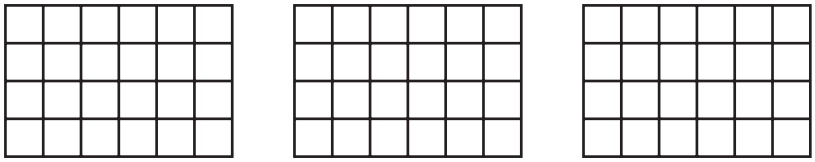

**4** **c)**

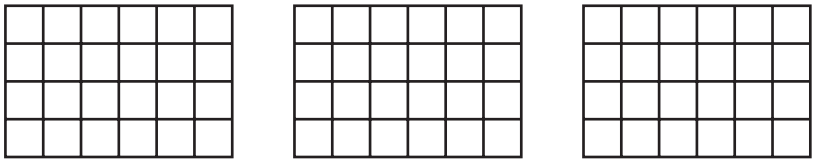


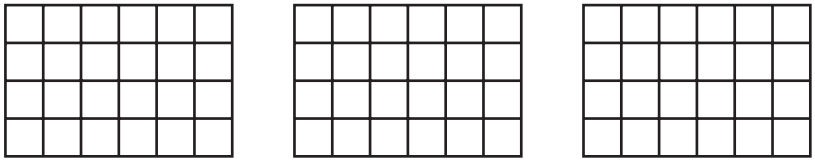

**d)**

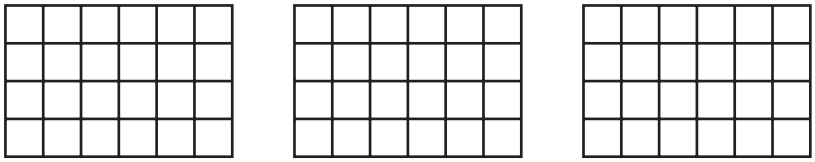
## 4 STARTER

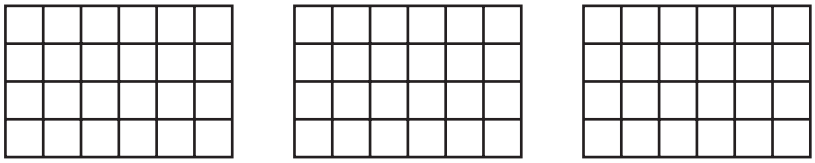
**2** **a)** $\frac{1}{2}$ 

**b)** $\frac{1}{3}$ 

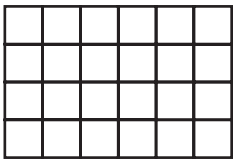
**c)** $\frac{3}{4}$ 

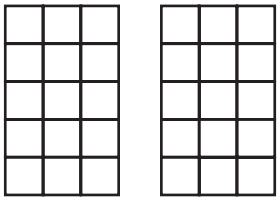
**d)** $\frac{1}{6}$ 

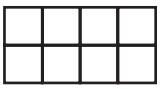
**e)** $\frac{3}{8}$ 

**f)** $\frac{5}{8}$ 

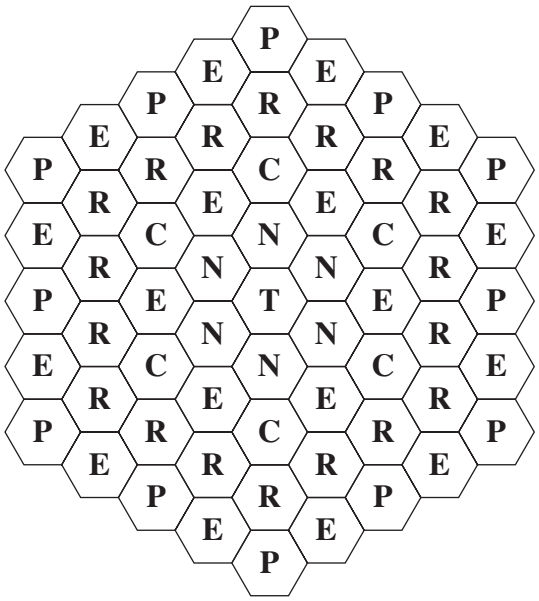
## REVIEW EXERCISE 4

**11** **b)** 

**12** 

**13** **a)** **ii)** 

## 5 STARTER




## EXERCISE 5.1, Q6

| Percentage | Decimal | Fraction |
|---|---|---|
| 1% | | |
| | 0.1 | |
| | 0.125 | |
| | | $\frac{1}{5}$ |
| 25% | | |
| 33.33% | | $\frac{1}{3}$ |
| 50% | | |
| | | $\frac{2}{3}$ |
| 75% | | |
| | 0.8 | |
| 90% | | |

## REVIEW EXERCISE 5, Q9

| Percentage | Decimal | Fraction |
|---|---|---|
| 65% | | |
| | 0.95 | |
| | | $\frac{17}{20}$ |
| 62.5% | | |
| | 0.3% | |
| | | $\frac{9}{40}$ |

## 6 STARTER A

| Round \ Bulb | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on |
| 2 | | off | | off | | off | | off | | off | | off | | off | | off | | off | | off | | off | | off | |
| 3 | | | off | | | on | | | off | | | on | | | off | | | on | | | off | | | on | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | |

## 6 STARTER B

| Bulb / Round | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |

| Bulb / Round | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |

## 6 STARTER B (continued)



| Round \ Bulb | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |

| Round \ Bulb | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on | on |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |

## EXERCISE 6.1

**4**

| | | | | | |
|---|---|---|---|---|---|
| 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 | 31 |
| 32 | 33 | 34 | 35 | 36 | 37 |
| 38 | 39 | 40 | 41 | 42 | 43 |
| 44 | 45 | 46 | 47 | 48 | 49 |
| 50 | 51 | 52 | 53 | 54 | 55 |
| 56 | 57 | 58 | 59 | 60 | 61 |
| 62 | 63 | 64 | 65 | 66 | 67 |
| 68 | 69 | 70 | 71 | 72 | 73 |
| 74 | 75 | 76 | 77 | 78 | 79 |
| 80 | 81 | 82 | 83 | 84 | 85 |
| 86 | 87 | 88 | 89 | 90 | 91 |
| 92 | 93 | 94 | 95 | 96 | 97 |

## INTERNET CHALLENGE 6

**1** Astronomers have calculated that the mass of the Sun is about ..... kg.

**2** The Sun is thought to have formed about ..... years ago.

**3** Each second the Sun's mass decreases by about ..... tonnes.

**4** The surface temperature of the Sun has been measured to be about ..... degrees C.

**5** It takes our Solar System about ..... years to make one revolution around the Milky Way galaxy.

**6** Light travels through space at a speed of ..... metres per second.

**7** The Sun is about ..... miles away.

**8** X-rays can have wavelengths as short as ..... metres.

**9** The Andromeda galaxy is so remote that light from it takes ..... years to reach us.

**10** It is thought that the Universe contains about ..... individual galaxies.

Match each number to a statement above.

| | | |
|---|---|---|
| $5 \times 10^9$<br>5 thousand million | $2.8 \times 10^6$<br>2.8 million | $2 \times 10^{30}$<br>2 billion, billion, billion, billion, billion |
| $6 \times 10^3$<br>6 thousand | $2.25 \times 10^8$<br>2.25 hundred million | $3 \times 10^8$<br>3 hundred million |
| $10^{-9}$<br>one billionth | $10^{11}$<br>1 hundred thousand million | $4 \times 10^6$<br>4 million |
| $94 \times 10^6$<br>94 million | | |

## INTERNET CHALLENGE 7

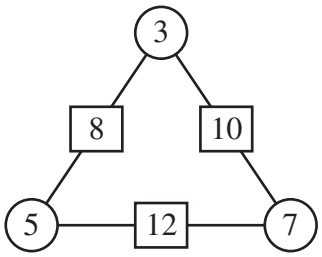
Look for the words below in this wordsearch, then try and define them.

| T | E | Q | U | A | T | I | O | N | N | D | P | O | R | I |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | X | S | P | G | F | E | N | Y | M | Z | S | E | R | Y |
| B | P | O | W | E | R | F | T | L | A | C | I | D | A | R |
| Q | R | X | O | Y | U | O | M | K | P | P | M | S | T | L |
| U | E | S | N | E | O | A | N | T | P | N | P | C | I | H |
| O | S | L | D | R | U | S | A | O | I | S | L | D | O | S |
| T | S | A | O | D | E | R | L | U | N | F | I | V | N | J |
| I | I | N | O | E | X | Y | E | A | G | I | F | A | A | Y |
| E | O | J | E | L | N | C | D | U | H | C | Y | R | L | T |
| N | N | D | N | O | I | T | C | N | U | F | E | I | Q | I |
| T | E | R | M | G | E | O | W | L | A | L | H | A | F | T |
| A | R | I | L | T | C | U | D | O | R | P | N | B | A | N |
| V | A | B | R | A | C | K | E | T | W | T | X | L | B | E |
| L | Y | T | S | F | A | C | T | O | R | I | S | E | L | D |
| C | I | T | A | R | D | A | U | Q | F | V | H | I | Y | I |

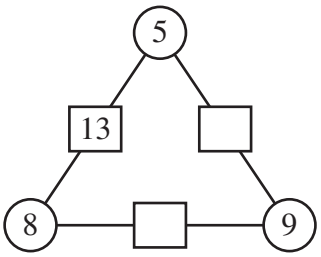
| **Word** | **Definition** |
|---|---|
| EQUATION | ..... |
| FUNCTION | ..... |
| POLYNOMIAL | ..... |
| QUOTIENT | ..... |
| SIMPLIFY | ..... |
| EXPAND | ..... |
| IDENTITY | ..... |
| POWER | ..... |
| BRACKET | ..... |
| SURD | ..... |
| EXPRESSION | ..... |
| INDEX | ..... |
| PRODUCT | ..... |
| RATIONAL | ..... |
| TERM | ..... |
| RACTORISE | ..... |
| MAPPING | ..... |
| QUADRATIC | ..... |
| ROOT | ..... |
| VARIABLE | ..... |

## 8 STARTER

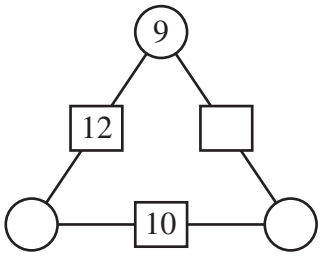
**1**



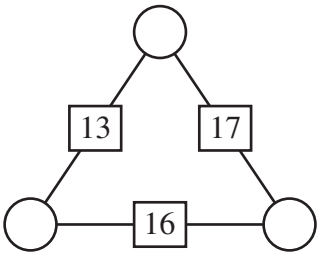

**2**




**3**




**4**




## EXERCISE 8.8

**1** $x^2 + 7x = 48$

| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 4$ | | | |
| $x = 5$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**2** $x^2 + 5x = 9$

| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 1$ | | | |
| $x = 2$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

(continued)

## EXERCISE 8.8 *(continued)*

**3** $x^3 + 2x = 10$

| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 1$ | | | |
| $x = 2$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**4** $x^2 - 2x = 11$

| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 4$ | | | |
| $x = 5$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**5** $x^3 - 10x + 1 = 0$

| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 3$ | | | |
| $x = 4$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

(continued)

## EXERCISE 8.8 *(continued)*

**6** $x^2 + 7x - 35 = 0$

| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 3$ | | | |
| $x = 4$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**7** $2x^2 + x = 7$

| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 1$ | | | |
| $x = 2$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**8** $x^2 + 2x = \dfrac{100}{x}$

| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 4$ | | | |
| $x = 5$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

(continued)

## EXERCISE 8.8 *(continued)*

**9** $x(x + 1) = 3$

| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 1$ | | | |
| $x = 2$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**10 b)** $3x^2 - x - 1 = 0$

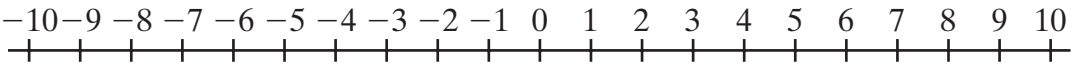
| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 0$ | | | |
| $x = 1$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**10 c)** $3x^2 - x - 1 = 0$

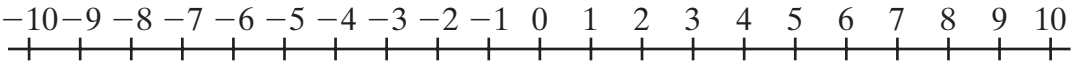
| Trial | Working | Result | Comment |
|---|---|---|---|
| $x = 0$ | | | |
| $x = -1$ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## EXERCISE 8.9, Q2

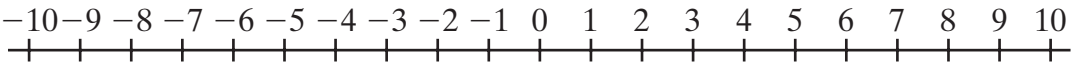
**a)** $a \leqslant 3$



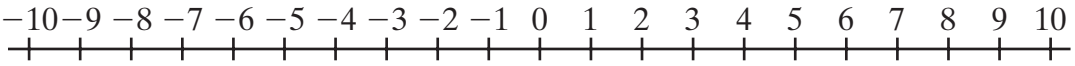

**b)** $b > 6$



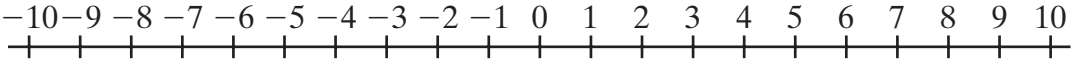

**c)** $c \geqslant -3$



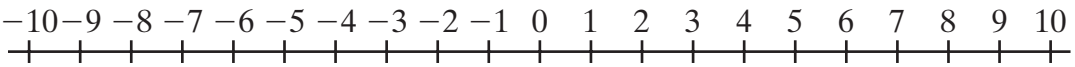

**d)** $-4 < d < 3$




**e)** $-2 \leqslant e \leqslant 3$

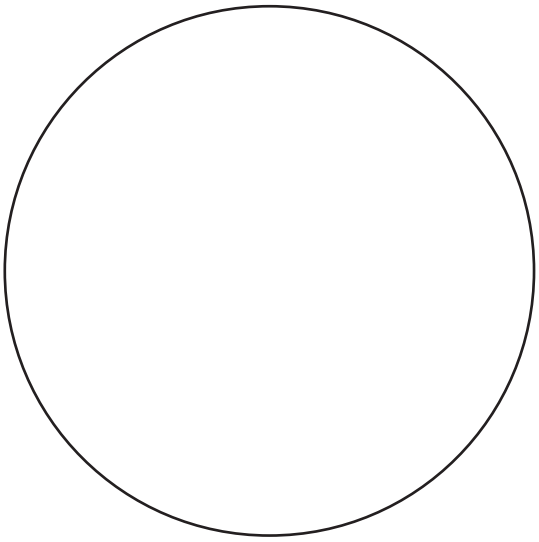



**f)** $-5 < f \leqslant -1$



## 9 STARTER

Hint: To be sure that you can see all the regions in your drawings, try to make all the distances between points on the circle different.

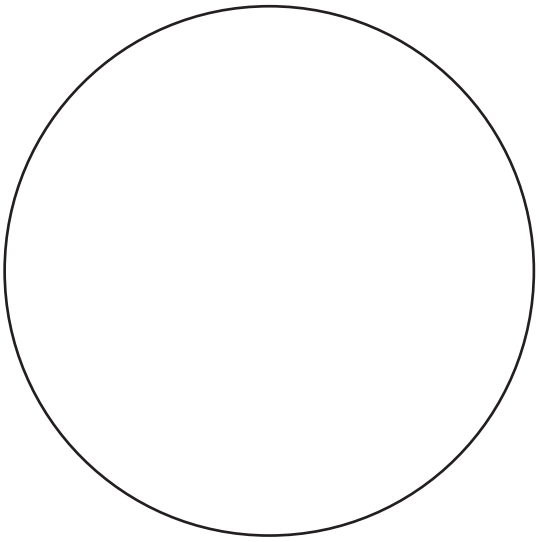


**Pattern 5**

.... points

.... lines

.... regions



**Pattern 6**

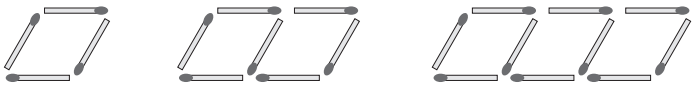
.... points

.... lines

.... regions

## EXERCISE 9.1

**1 a)**

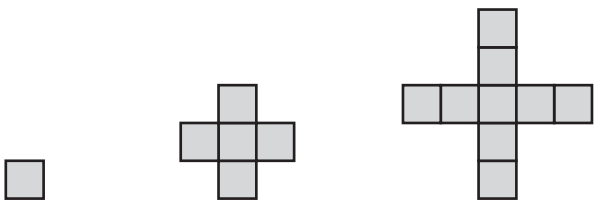


Pattern 1 Pattern 2 Pattern 3 Pattern 4

**b)**

| **Pattern number** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of matches** | 4 | 7 | 10 | | |

**2 a)**



Pattern 1 Pattern 2 Pattern 3 Pattern 4

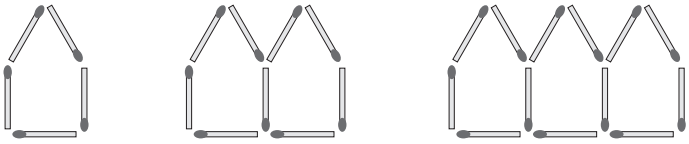
**b)**

| **Pattern number** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of squares** | 1 | 5 | 9 | | |

(continued)

## EXERCISE 9.1 (continued)

**3 a)**

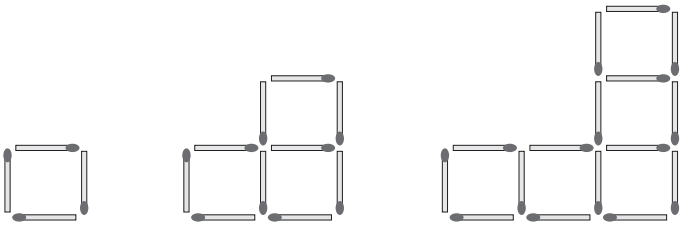


Hut 1 Hut 2 Hut 3 Hut 4

**b)**

| **Hut number** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of matches** | 5 | 9 | 13 | | |

**4 a)**



Pattern 1 Pattern 2 Pattern 3 Pattern 4

**b)**

| **Pattern number** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of matchsticks** | 4 | 10 | 16 | | |
| **Number of squares** | 1 | 3 | 5 | | |

**5 a)**

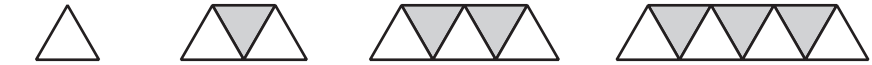
Fence 1 Fence 2 Fence 3 Fence 4

**b)**

| **Fence number** | 1 | 2 | 3 | 4 | 5 | 10 | 20 |
|---|---|---|---|---|---|---|---|
| **Number of uprights** | 2 | 3 | 4 | | | | |
| **Number of crossbars** | 2 | 4 | 6 | | | | |

## EXERCISE 9.5

**2 a)**

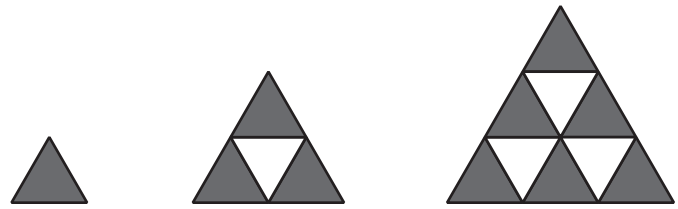


Pattern 1 Pattern 2 Pattern 3 Pattern 4 Pattern 5

**b)**

| **Pattern number** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of triangles** | 1 | 3 | 5 | | |

**3 a)**



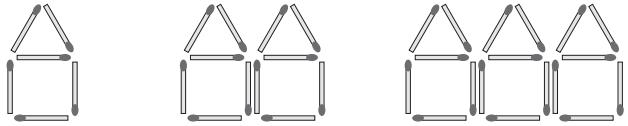
Pattern 1 Pattern 2 Pattern 3 Pattern 4

**b)**

| **Pattern number** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of black triangles** | 1 | 3 | 6 | | |
| **Number of white triangles** | 0 | 1 | 3 | | |
| **Total number of triangles** | 1 | 4 | 9 | | |

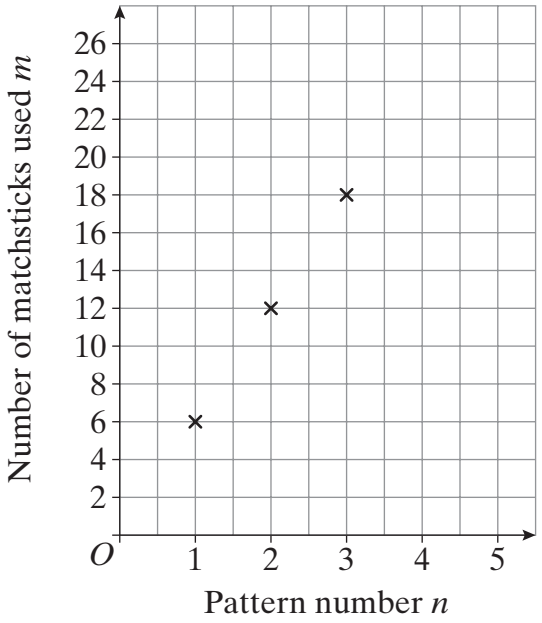
## REVIEW EXERCISE 9

**8 a)**



Pattern 1 Pattern 2 Pattern 3 Pattern 4

**b)**




[Edexcel]

**11 c)**

Pattern 1 Pattern 2 Pattern 3 Pattern 4

**d)**

| **Pattern number** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of dots** | 5 | 8 | 11 | | |

[Edexcel]

(continued)

## REVIEW EXERCISE 9 (continued)

**12 c)**

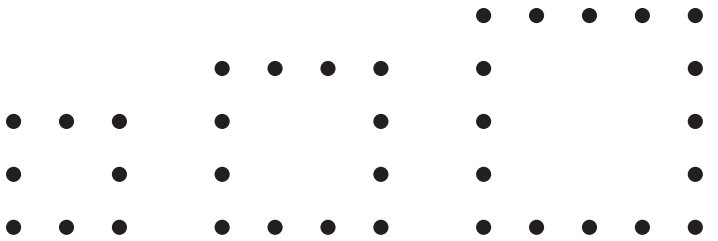
Pattern 1 Pattern 2 Pattern 3 Pattern 4

**d)**

| **Pattern number** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of crosses** | 6 | 10 | 14 | | |

[Edexcel]

**13 a)**



Pattern 1 Pattern 2 Pattern 3 Pattern 4

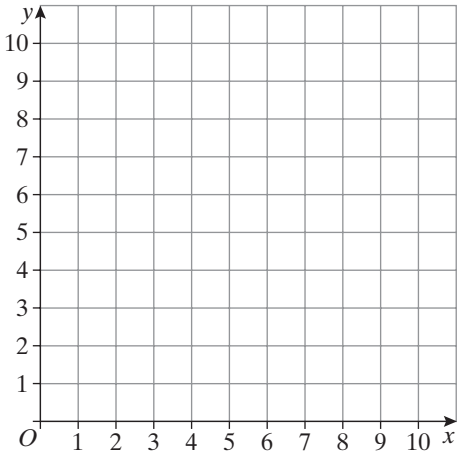
**b)**

| **Pattern number** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of dots** | 8 | 12 | 16 | | |

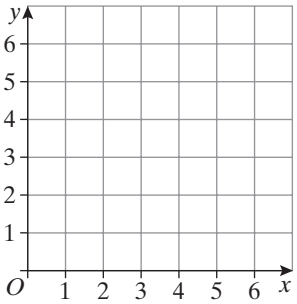
[Edexcel]

## EXERCISE 10.1

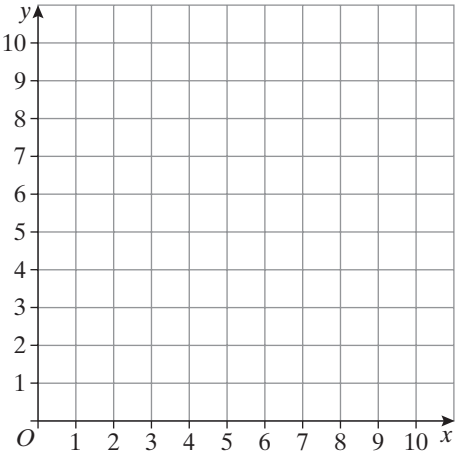
**4**




**5**

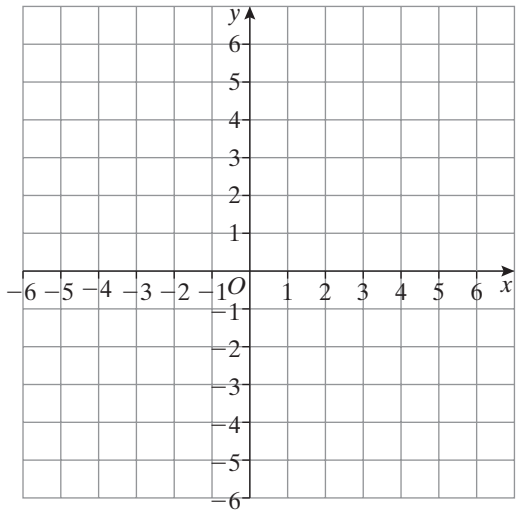



**6**

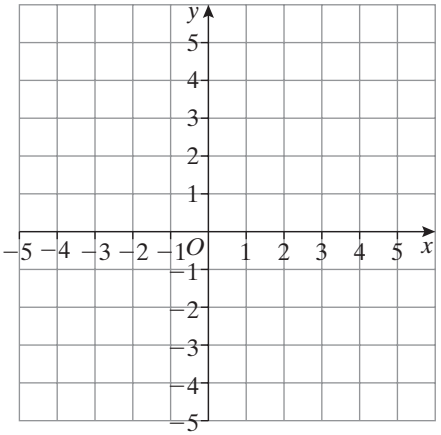



## EXERCISE 10.2

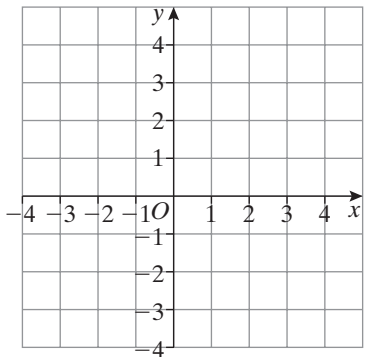
**3**



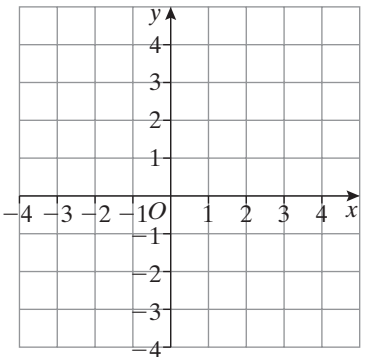

**4**




**5**

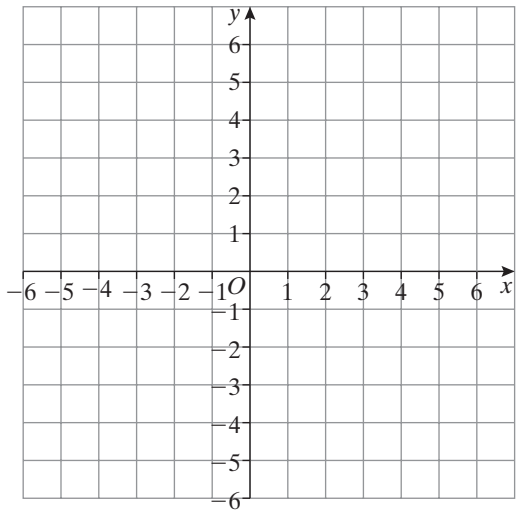



**6**



## EXERCISE 10.4

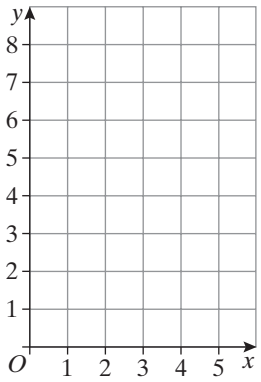
**2**




**3** **a)** $y = x + 3$

| $x$ | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| $y$ | 3 | | 5 | | 7 | |

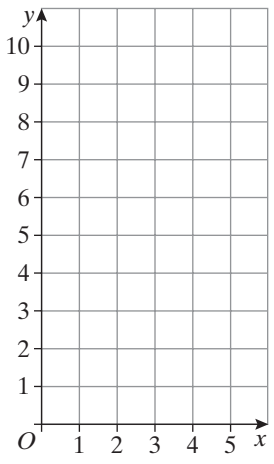
**b)**




**4** **a)** $y = 2x$

| $x$ | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| $y$ | 0 | 2 | | | 8 | |

**b)**



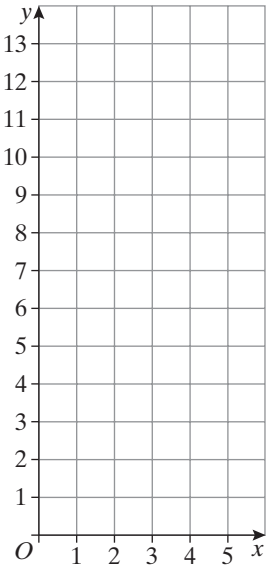

(continued)

## EXERCISE 10.4 (continued)

**5** **a)** $y = 2x + 3$

| $x$ | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| $y$ | 3 | 5 | | | | 13 |

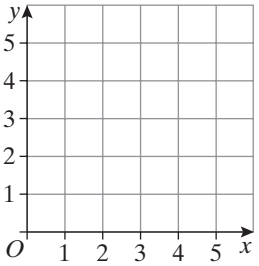
**b)**




**6** **a)** $y = 5 - x$

| $x$ | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| $y$ | 5 | 4 | | | | 0 |

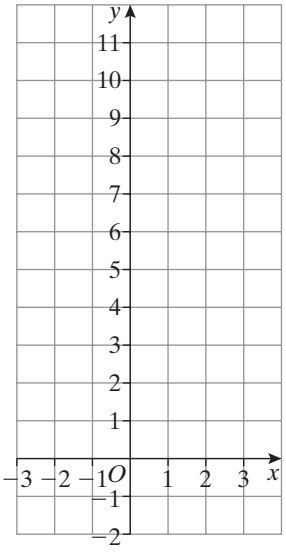
**b)**




**7** **a)** $y = 2x + 5$

| $x$ | −3 | −2 | −1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| $y$ | −1 | | 3 | | | | 11 |

**b)**



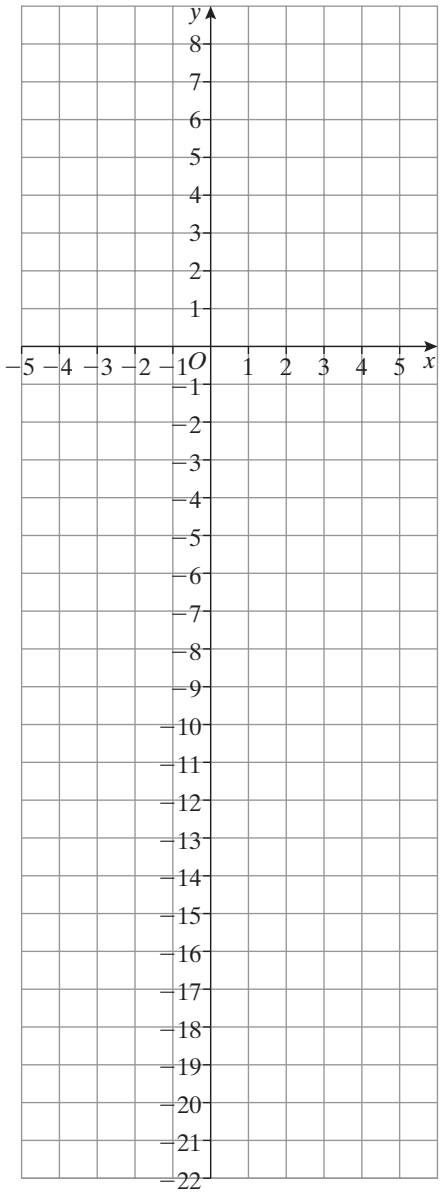

(continued)

## EXERCISE 10.4 (continued)

**8** **a)** $y = 5x - 7$

| $x$ | $-3$ | $-2$ | $-1$ | $0$ | $1$ | $2$ | $3$ |
|---|---|---|---|---|---|---|---|
| $y$ | $-22$ | | | $-7$ | | | |

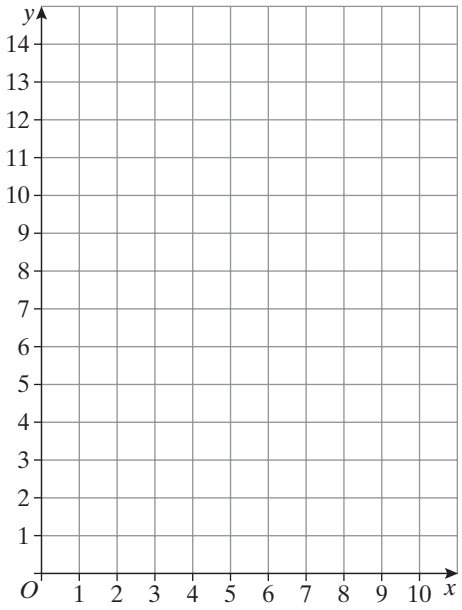
**b)**




**9** **a)** $2x + y = 14$

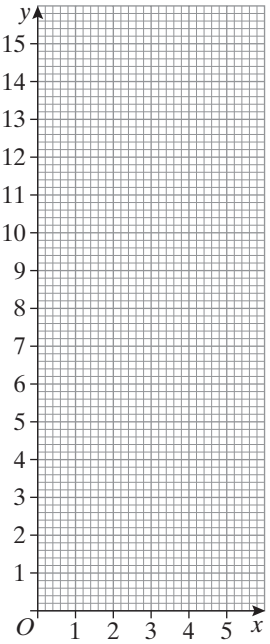
| $x$ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| $2x$ | 0 | | | 6 | | 10 | |
| $y$ | 14 | | | 8 | | 4 | |

**b)**

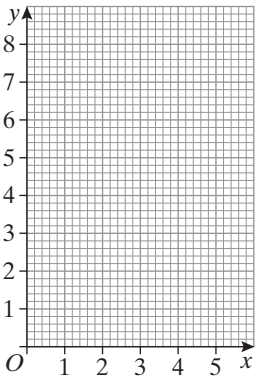


## EXERCISE 10.4 (continued)

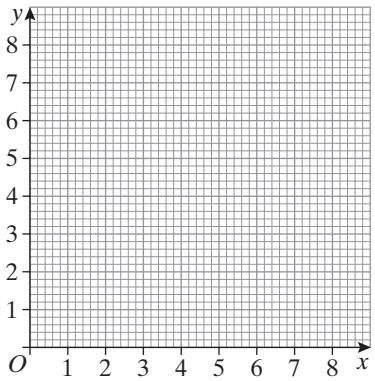
**10**



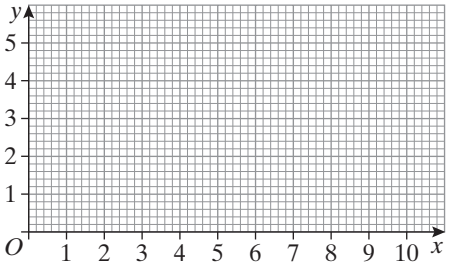

**11**



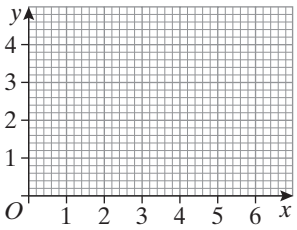

**12**



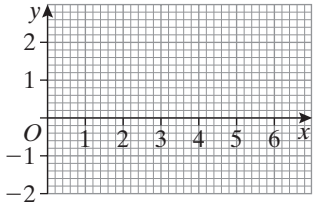

**13 a)**




**b)**




**c)**

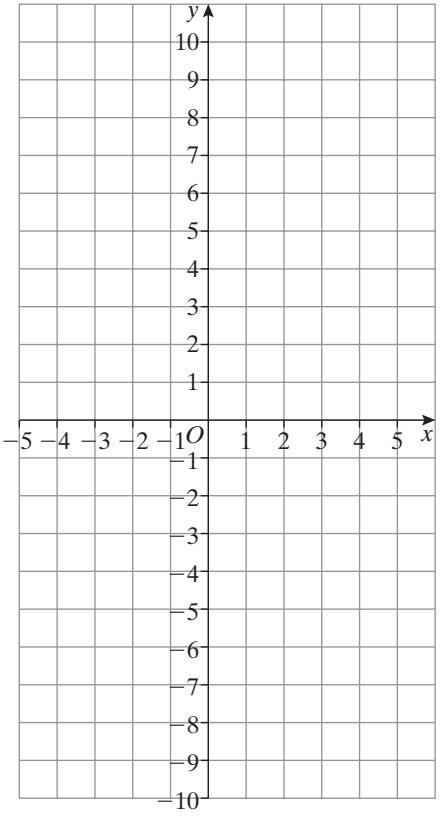


## EXERCISE 10.7

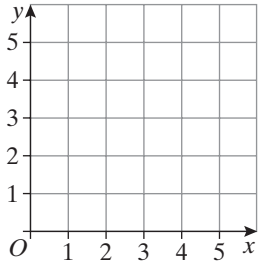
**1**

| $x$ | $-4$ | $0$ | $4$ |
|---|---|---|---|
| $y = 2x + 1$ | | | |

| $x$ | $-4$ | $0$ | $4$ |
|---|---|---|---|
| $y = x - 2$ | | | |




**2**



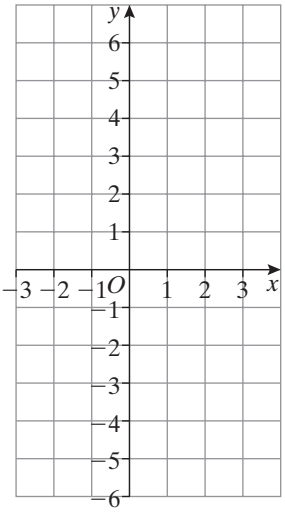

| $x + y = 9$ | $0$ | $2$ | $5$ |
|---|---|---|---|
| $y$ | | | |

| $x$ | $0$ | $2$ | $5$ |
|---|---|---|---|
| $y = 2x$ | | | |

**3**

| $x$ | $-3$ | $0$ | $3$ |
|---|---|---|---|
| $y = 2x$ | | | |

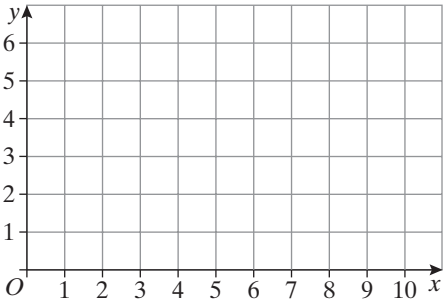
| $x$ | $-3$ | $0$ | $3$ |
|---|---|---|---|
| $y = x - 1$ | | | |



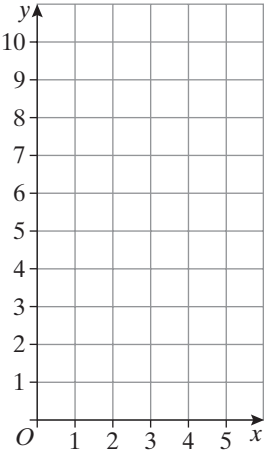

**4**

| $x$ | $0$ | $6$ | $10$ |
|---|---|---|---|
| $y = x - 4$ | | | |

| $x$ | $0$ | $6$ | $10$ |
|---|---|---|---|
| $y = \frac{1}{2}x$ | | | |




**5**

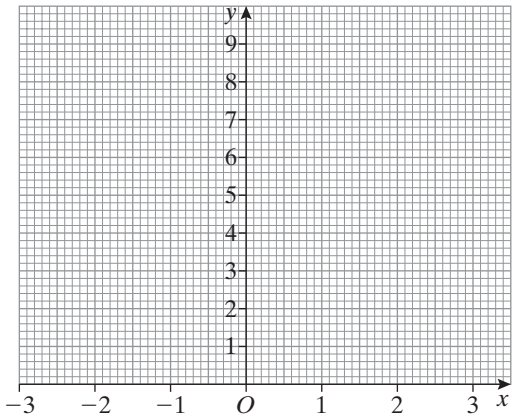


## EXERCISE 10.8

**1** **a)**

| $x$ | $-3$ | $-2$ | $-1$ | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| $x^2$ | 9 | | 1 | | | 4 | |
| $y$ | 9 | | 1 | | | 4 | |

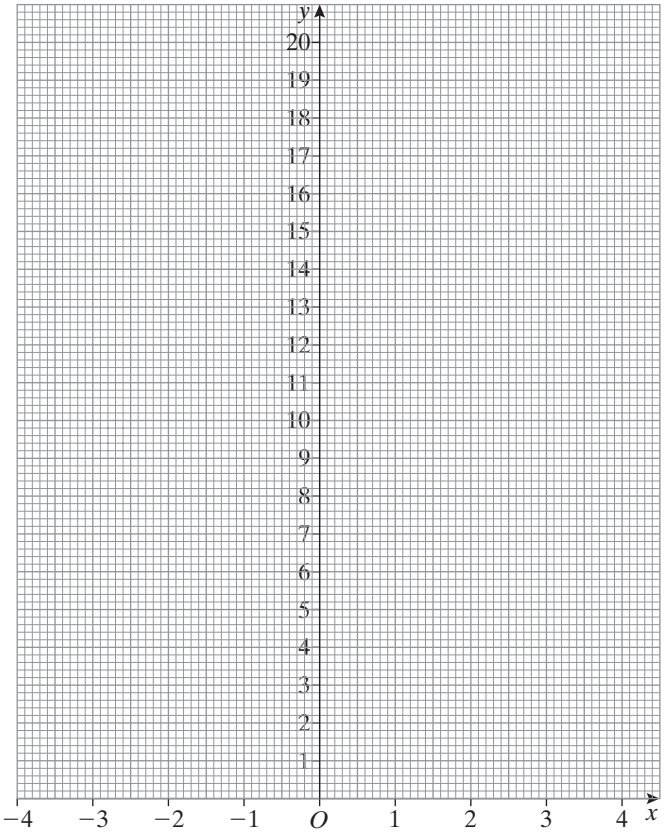
**b)**




**2** **a)**

| $x$ | $-4$ | $-3$ | $-2$ | $-1$ | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| $x^2$ | 16 | | | 1 | 0 | 1 | | 9 | |
| $+3$ | $+3$ | | | $+3$ | | $+3$ | | $+3$ | |
| $y$ | 19 | | | 4 | | | | 12 | |

**b)**



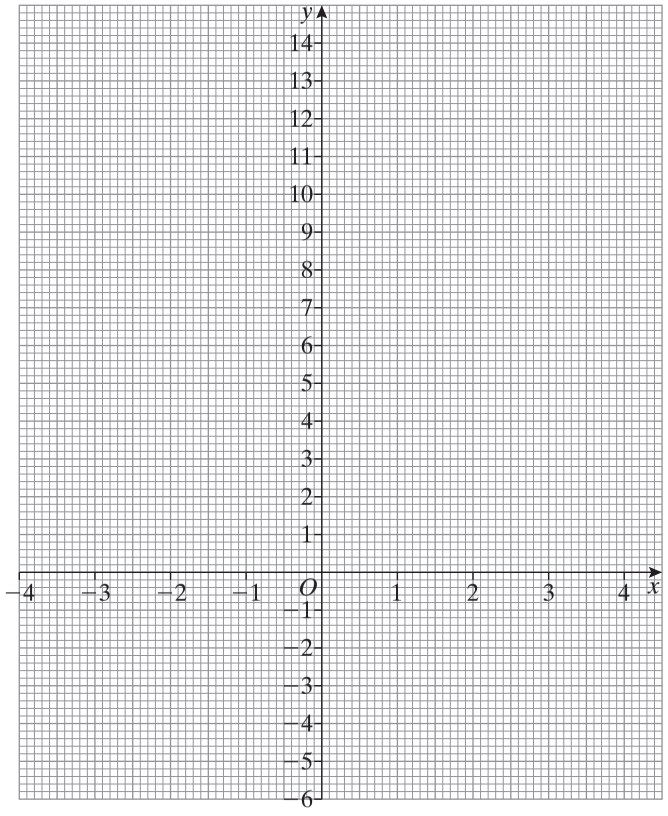

(continued)

## EXERCISE 10.8 (continued)

**3 a)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| $x^2$ | | 9 | | | 0 | | 4 | | |
| $-4$ | | −4 | | −4 | | −4 | −4 | | |
| $y$ | | 5 | | | | | 0 | | |

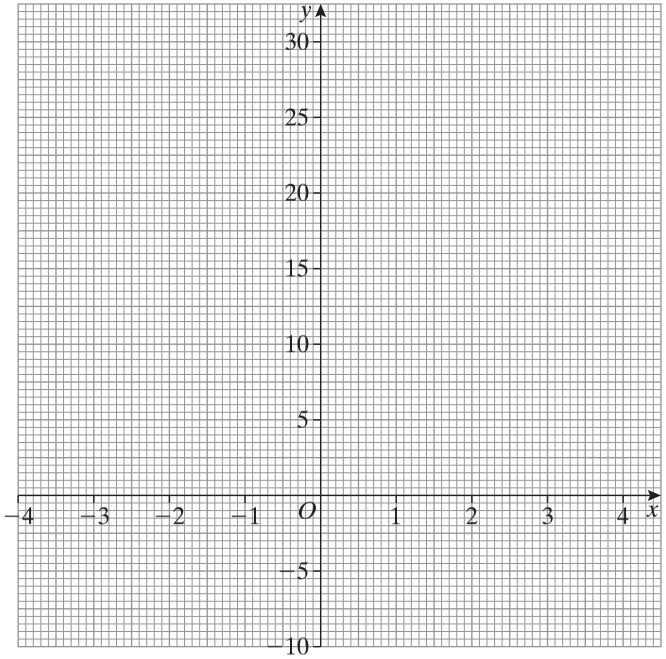
**b)**




**4 a)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| $x^2$ | | 9 | | | | | 4 | | |
| $2x^2$ | | 18 | | | | | 8 | | |
| $-4$ | | −4 | | −4 | | −4 | −4 | | |
| $y$ | | 14 | | | | | 4 | | |

**b)**



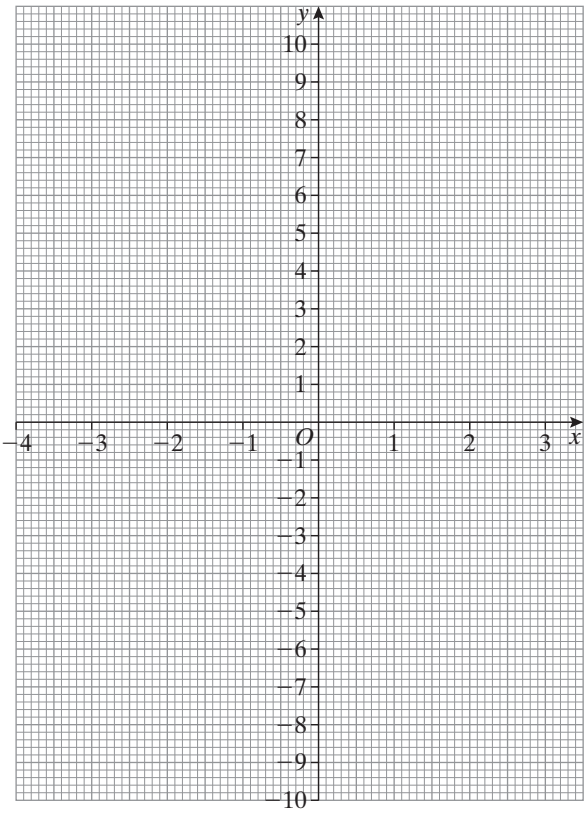

(continued)

## EXERCISE 10.8 (continued)

**5 a)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|---|
| $x^2$ | 16 | 9 | | | | | | 9 |
| $+2x^2$ | −8 | −6 | | | | | | 6 |
| $-6$ | −6 | −6 | | | | | | −6 |
| $y$ | 2 | −3 | | | | | | 9 |

**b)**




(continued)

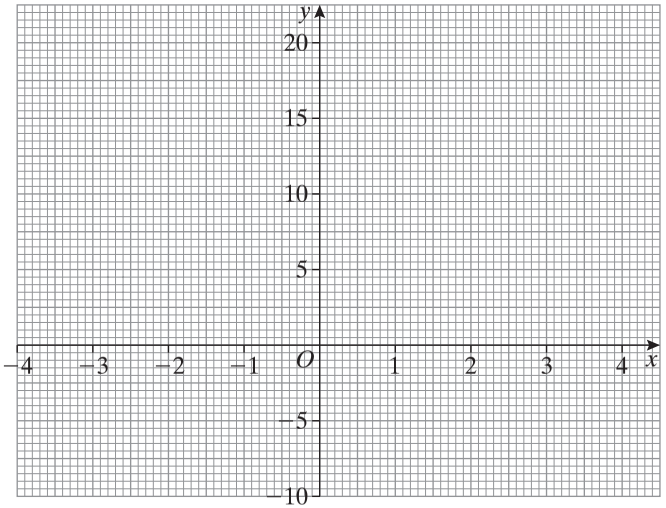
## EXERCISE 10.8 (continued)

**6 a)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| $y$ | | | | | | | | | |


**b)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| $y$ | | | | | | | | | |

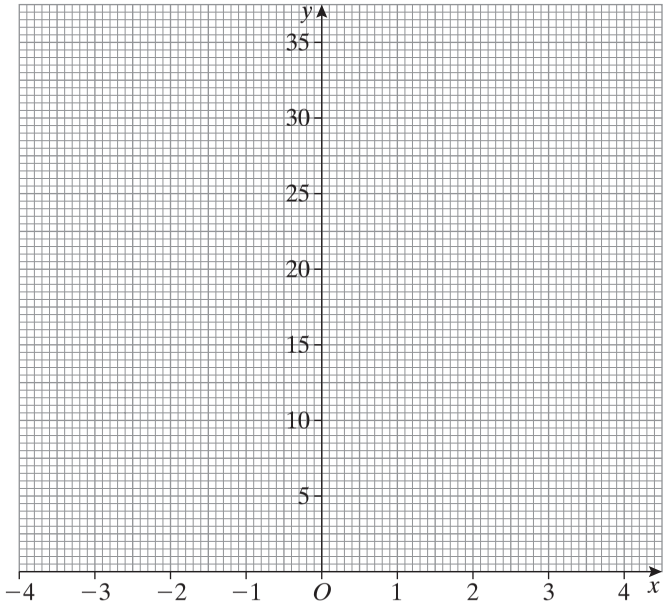



(continued)

## EXERCISE 10.8 (continued)

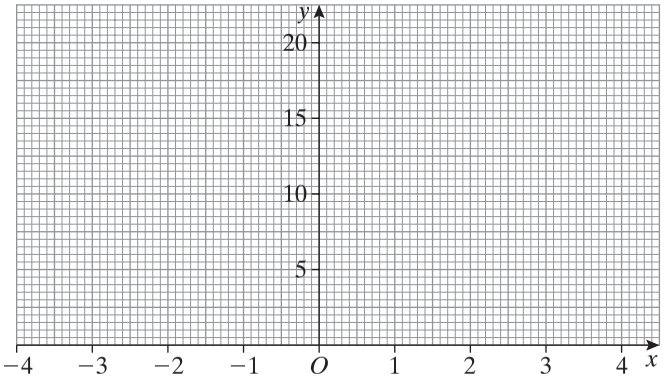
**6 c)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| $y$ | | | | | | | | | |




**d)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| $y$ | | | | | | | | | |

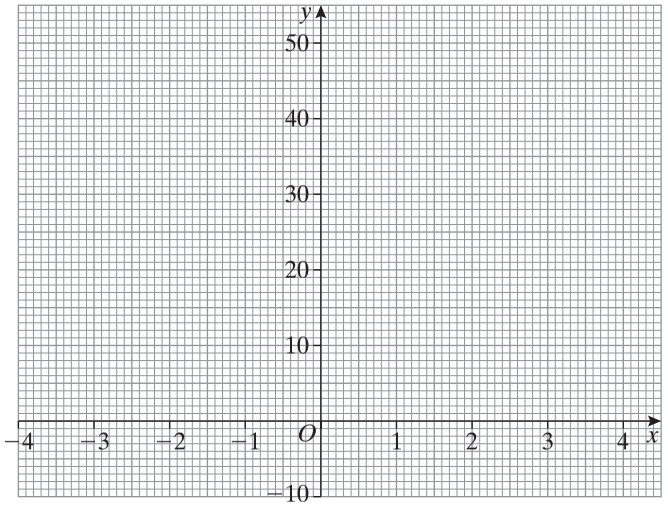



(continued)

## EXERCISE 10.8 (continued)

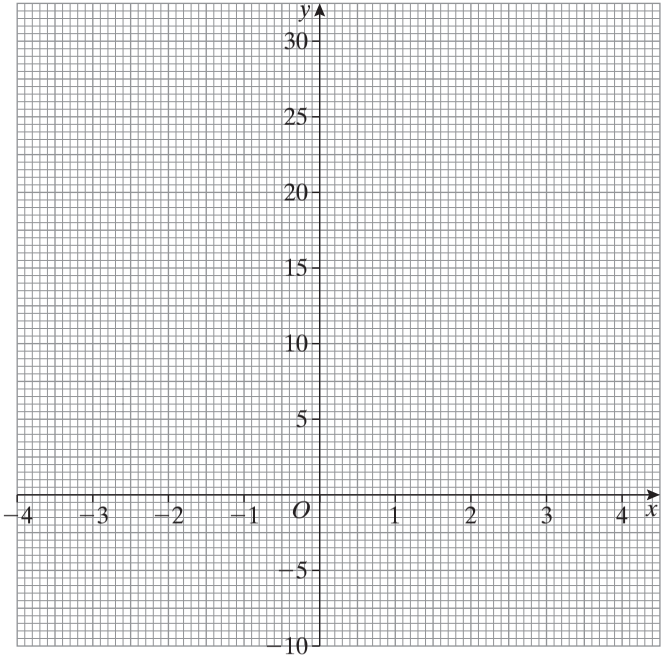
**6 e)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| $y$ | | | | | | | | | |



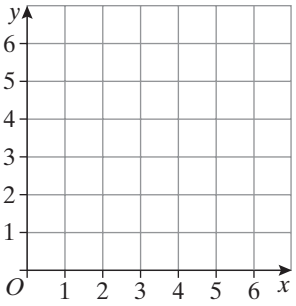

**f)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

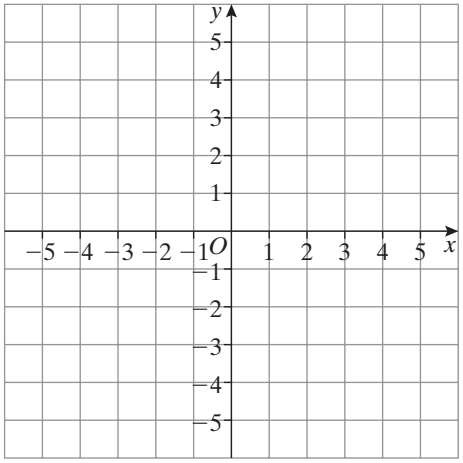


## REVIEW EXERCISE 10

**2**



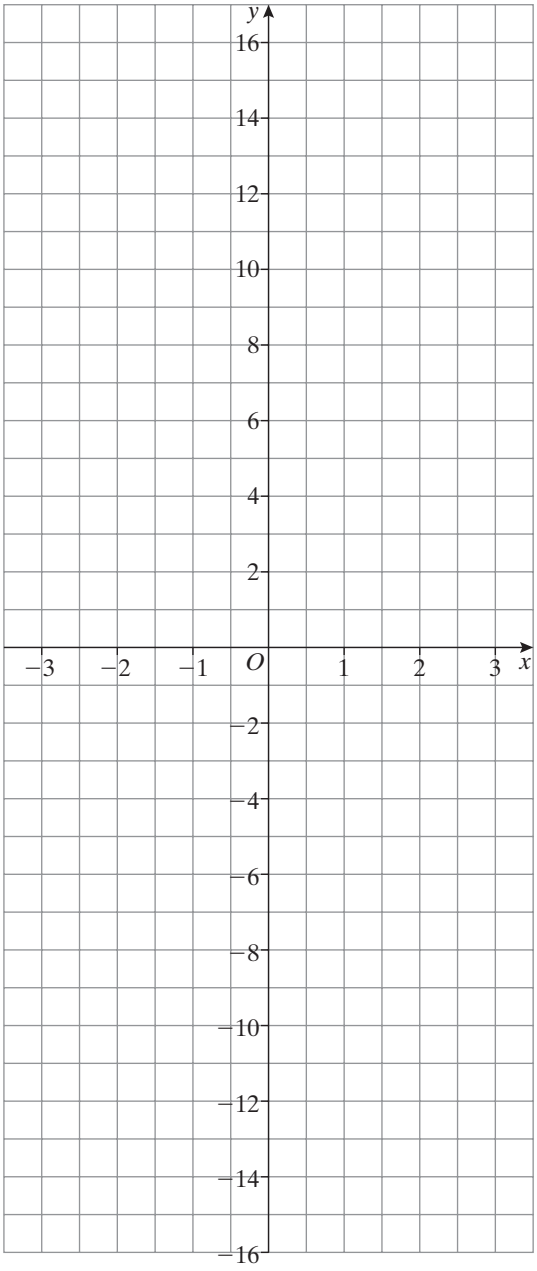

**3**




**6** **a)**

| $x$ | −3 | −2 | −1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| $y$ | | | | −3 | 2 | | |

**b)**



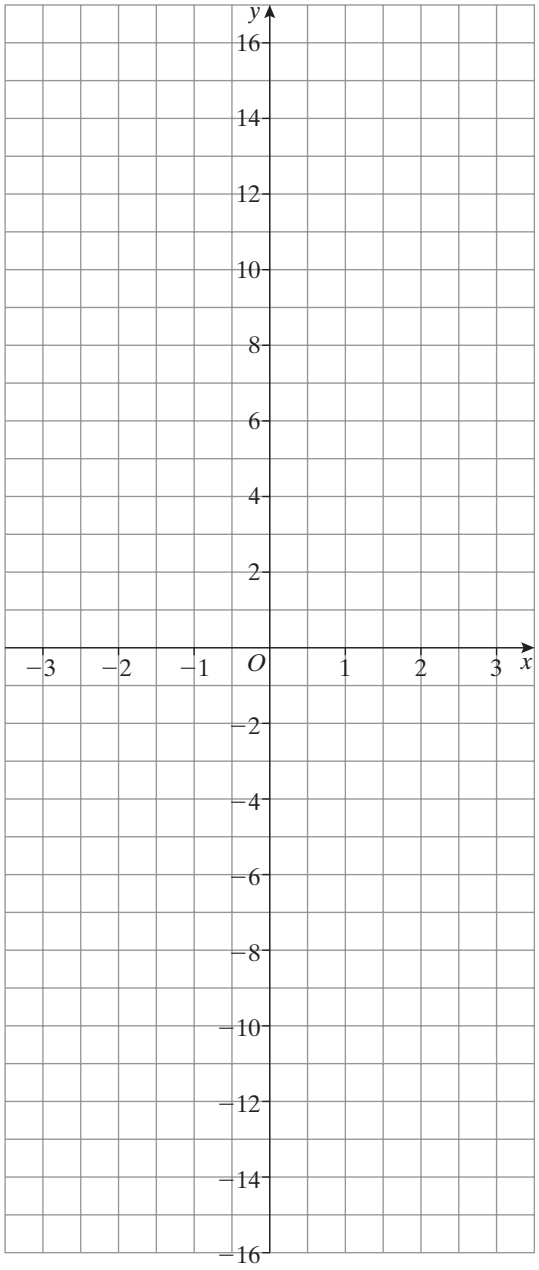

(continued)

## REVIEW EXERCISE 10 (continued)

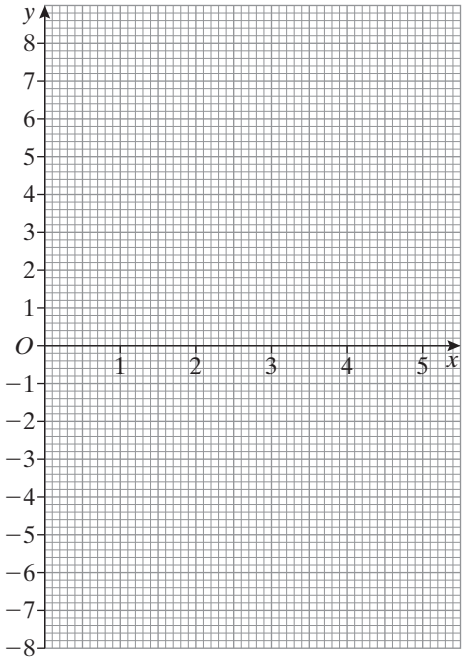
**7 a)**

| $x$ | $-3$ | $-2$ | $-1$ | $0$ | $1$ | $2$ | $3$ |
|---|---|---|---|---|---|---|---|
| $y$ | $-13$ | | | $-1$ | | | |

**b)**

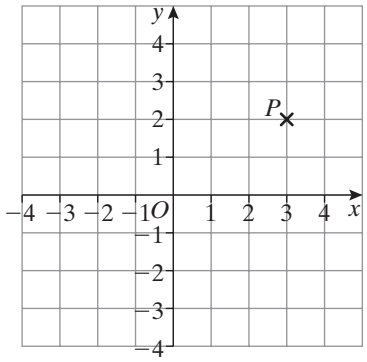



**8 a)**



## REVIEW EXERCISE 10 (continued)

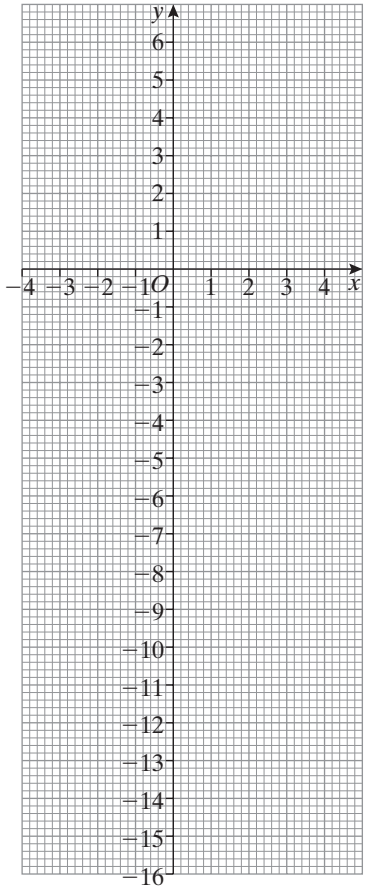
**10 b)**




**12 a)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| **3** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| $-x^2$ | | −9 | | | 0 | | −4 | | |
| $y$ | | −6 | | | | | −1 | | |

**b)**



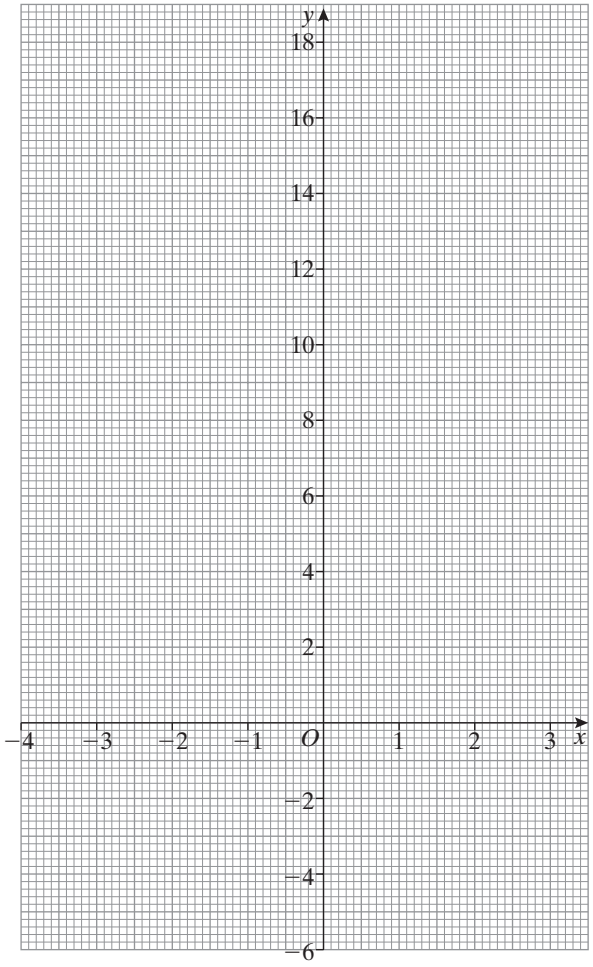

(continued)

## REVIEW EXERCISE 10 (continued)

**13 a)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|---|
| $x^2$ | 16 | 9 | | | | | | 9 |
| $+3x$ | −12 | −9 | | | | | | +9 |
| $-2$ | −2 | −2 | | | | | | −2 |
| $y$ | 2 | −2 | | | | | | 16 |

**b)**



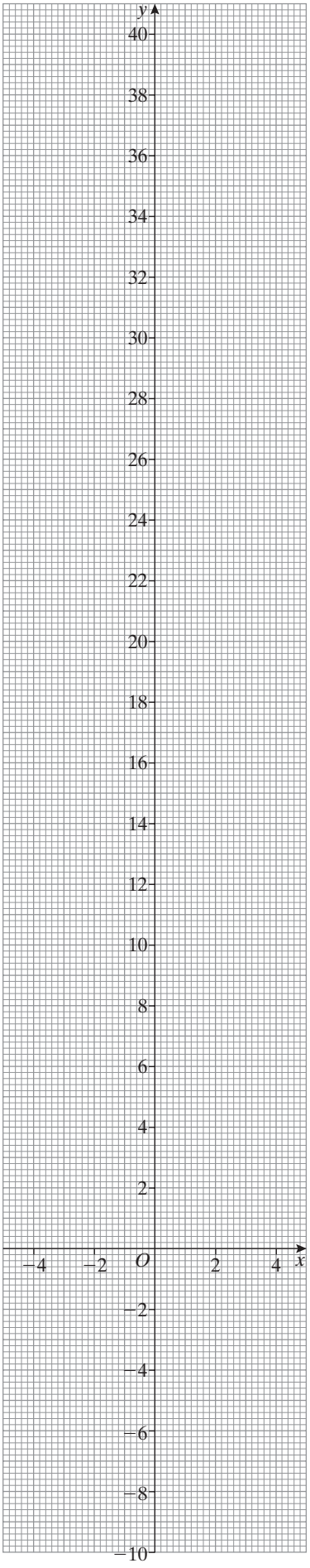

(continued)

## REVIEW EXERCISE 10 (continued)

**14 a)**

| $x$ | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| $x^2$ | | 9 | | | | | 4 | | |
| $3x^2$ | | 27 | | | | | 12 | | |
| $-10$ | | −10 | | | | | −10 | | |
| $y$ | | 17 | | | | | 2 | | |

**b)**

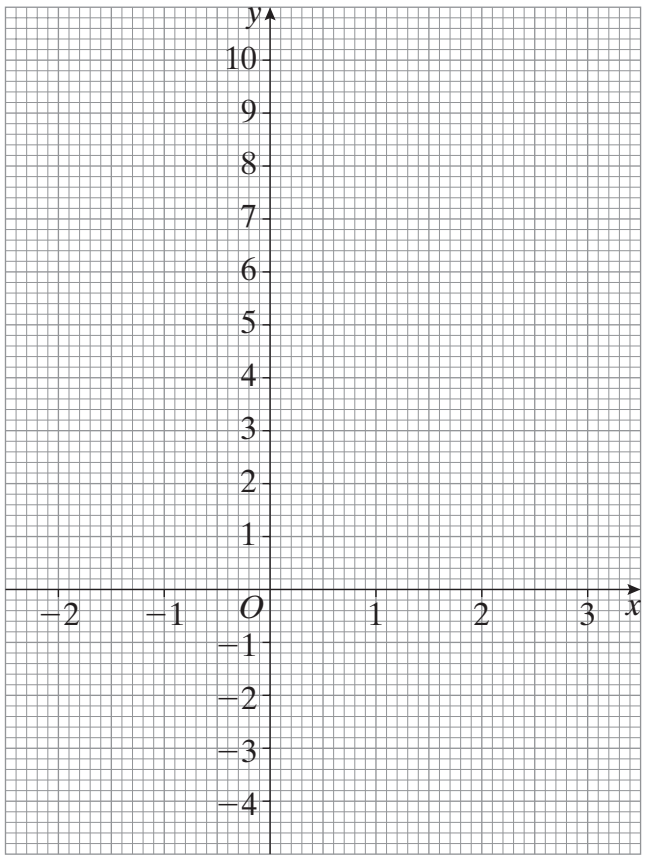


## REVIEW EXERCISE 10 (continued)

**15 a)**

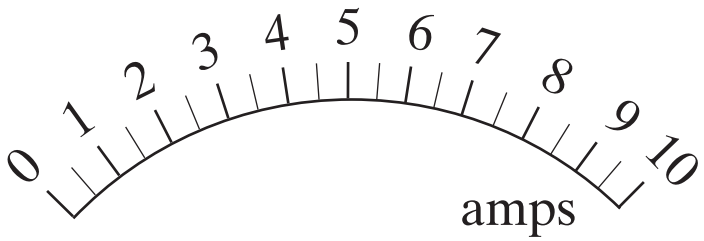
| $x$ | $-2$ | $-1$ | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| $y$ | | 1 | 3 | | | |

**b)**

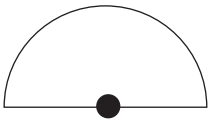


## REVIEW EXERCISE 11

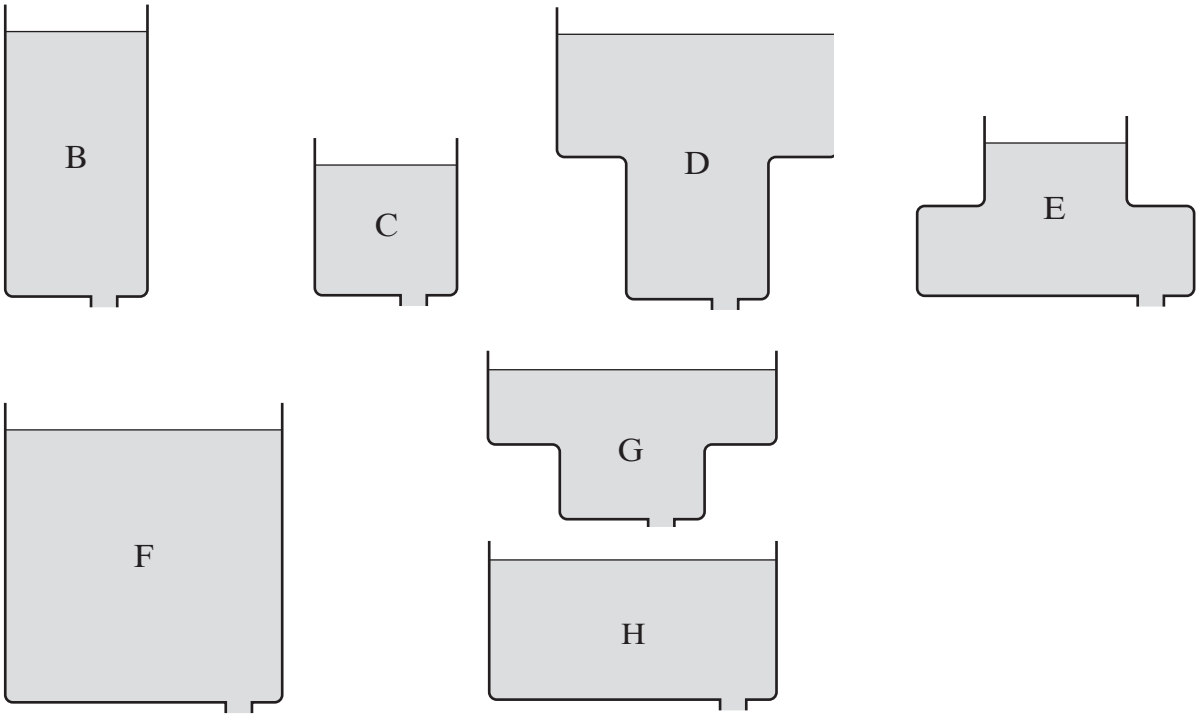
**3**

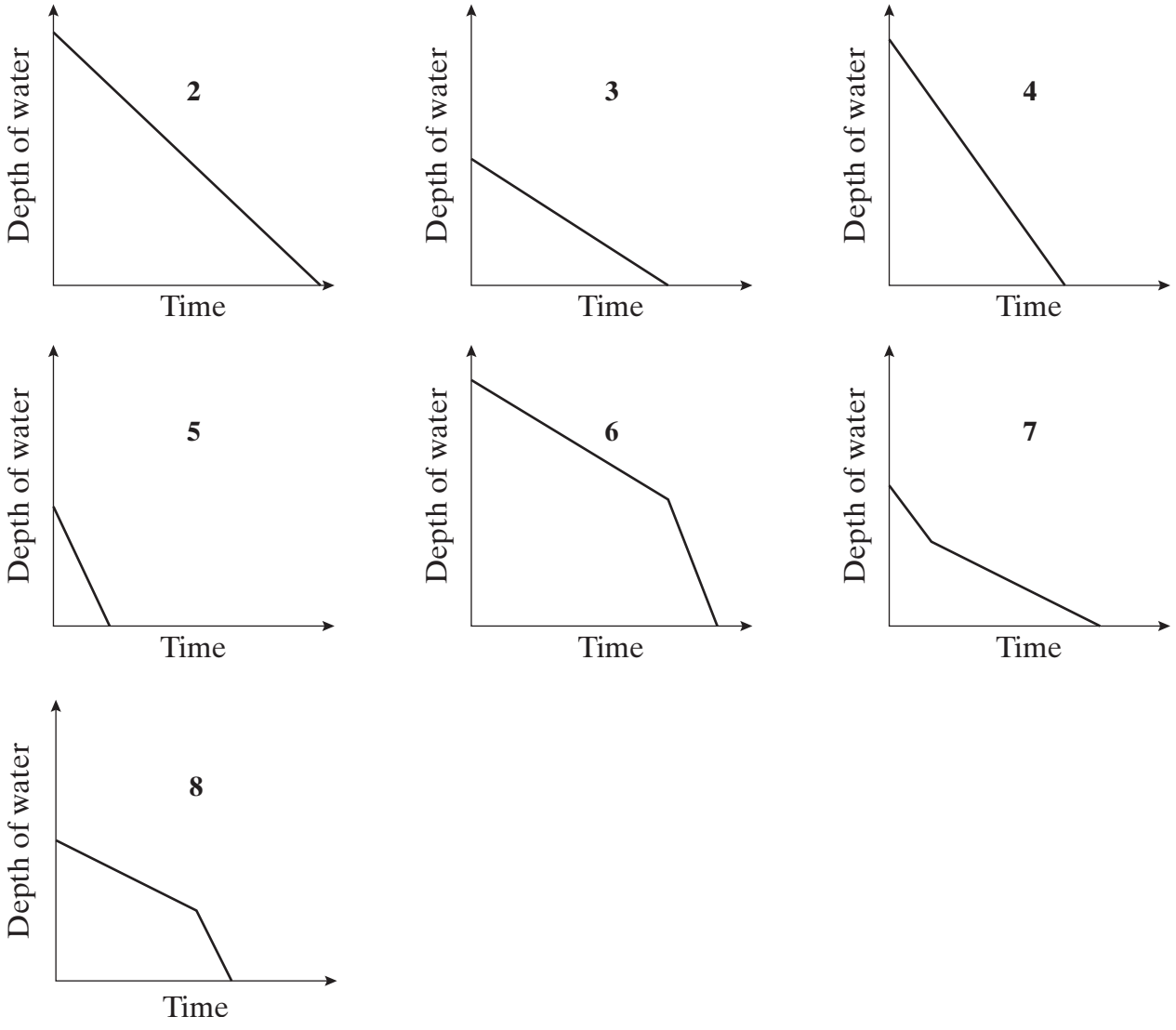



Scale C



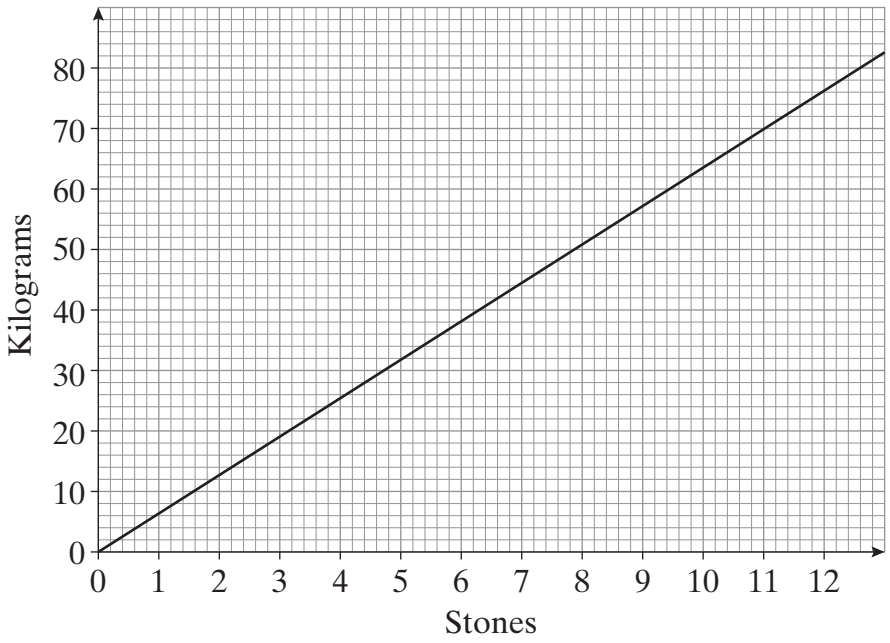
## 12 STARTER



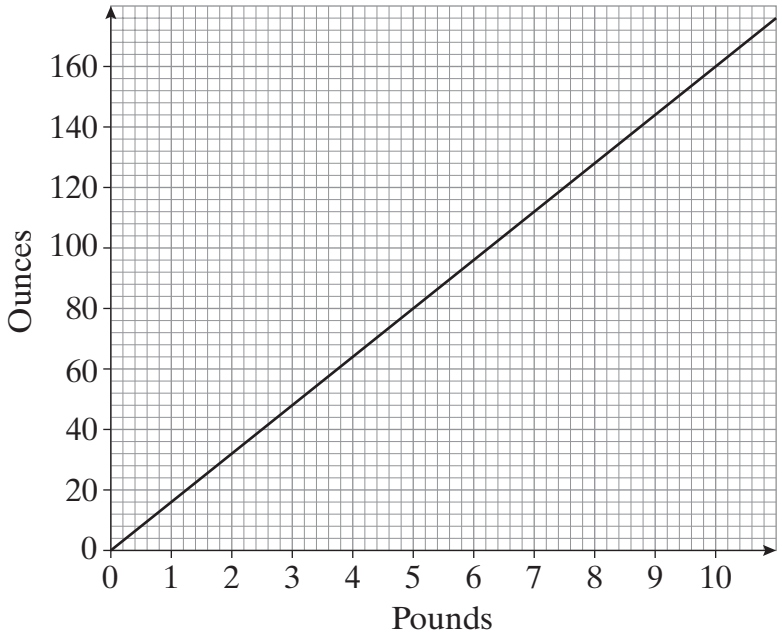



## EXERCISE 12.1

**1**



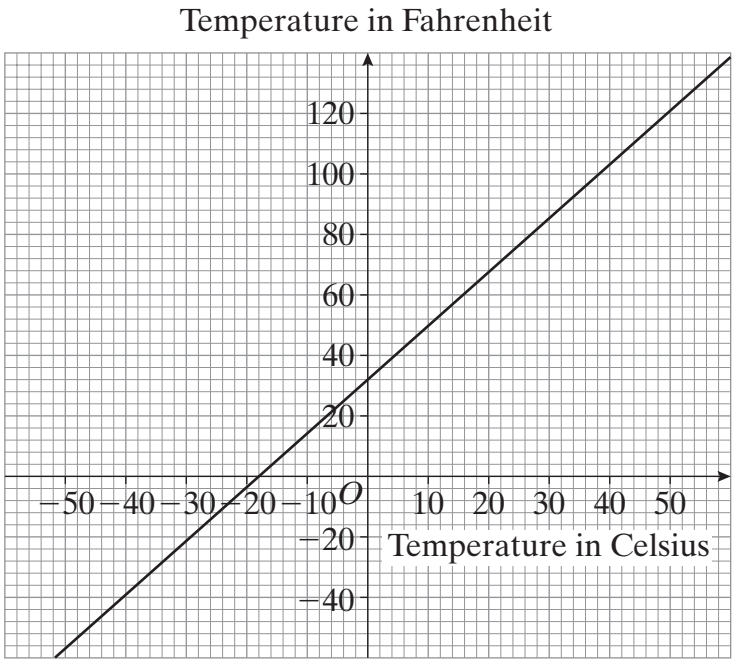

**2**



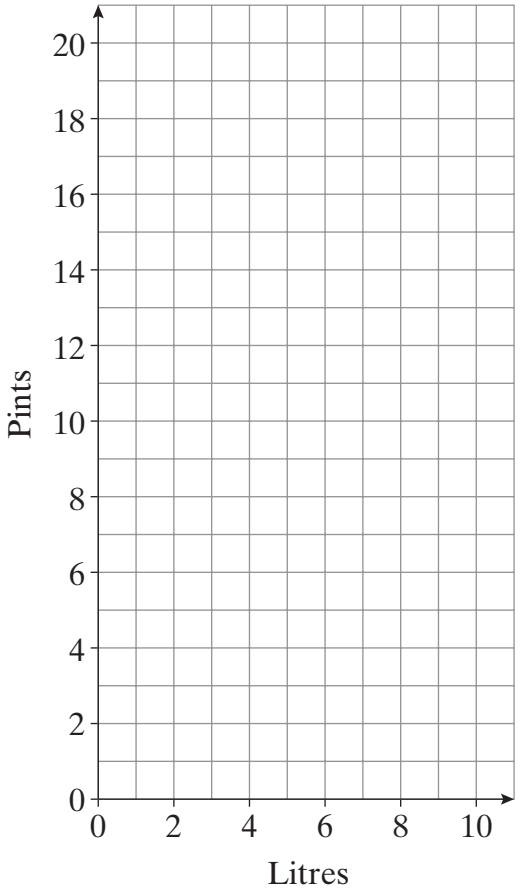

(continued)

## EXERCISE 12.1 (continued)

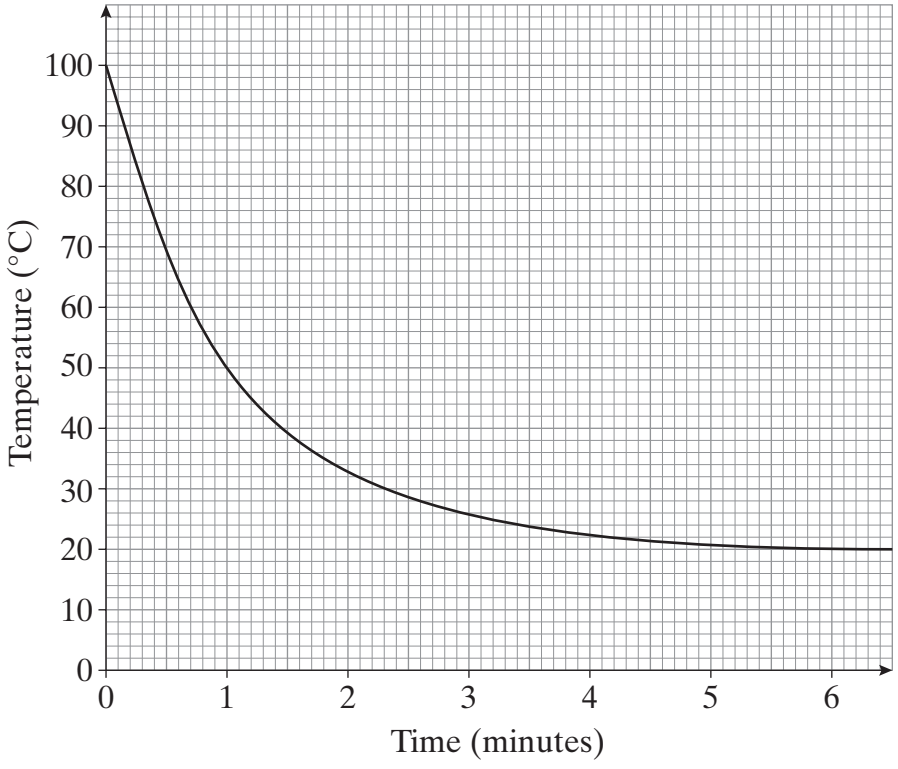
**3**




**5**

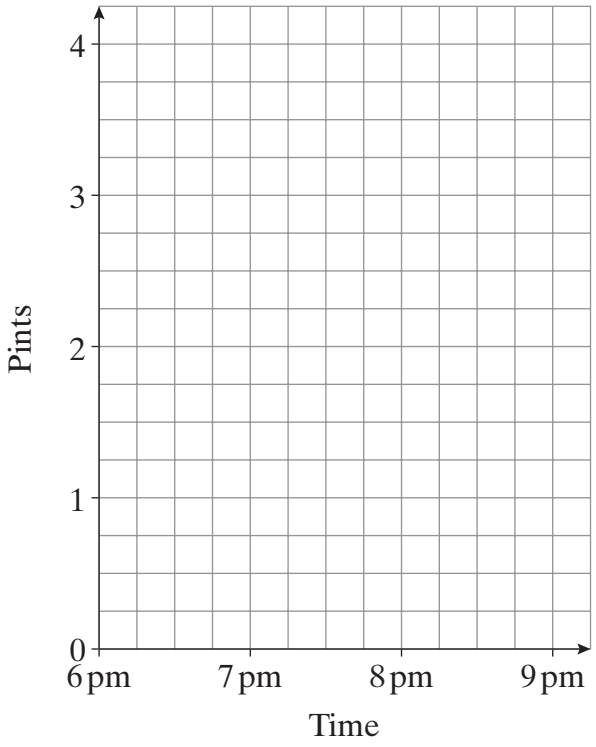



**4**

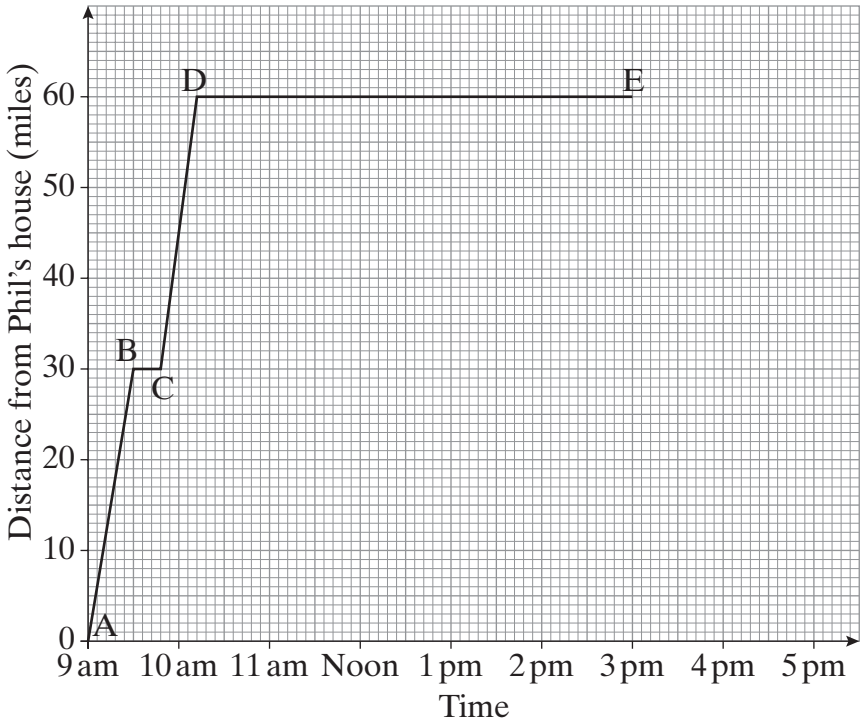


## EXERCISE 12.2

**1**



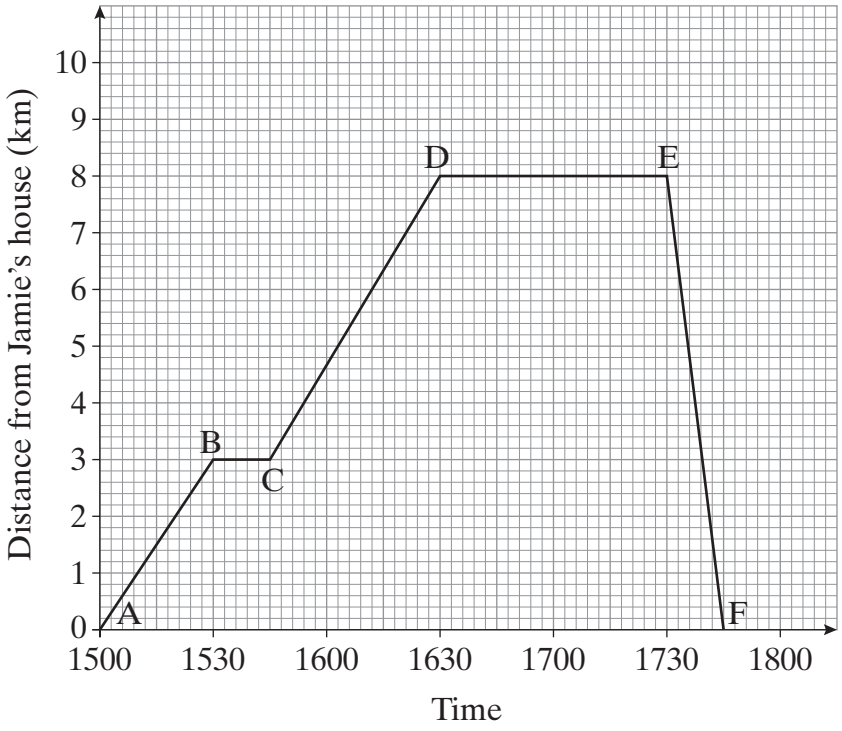

**2**



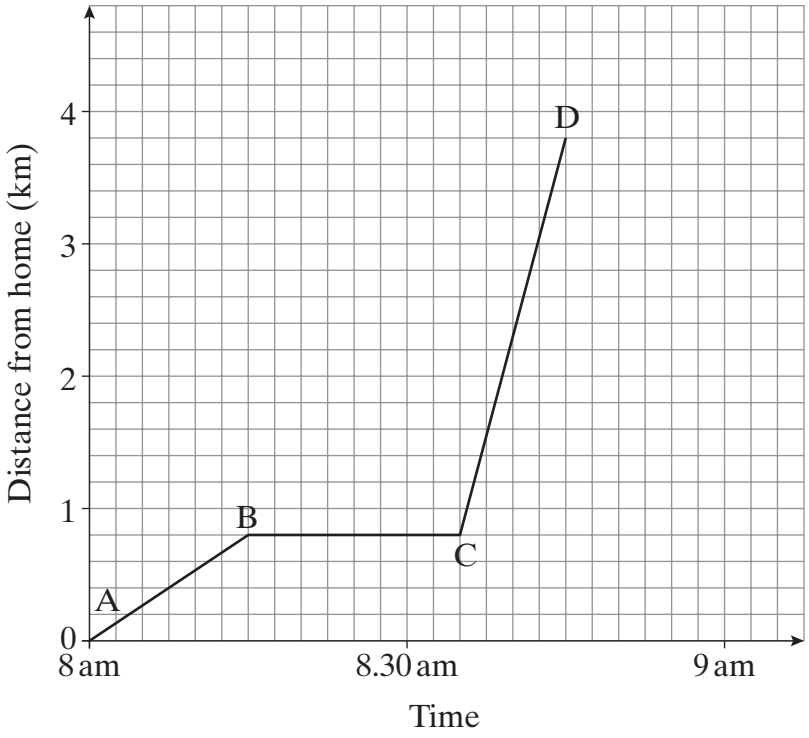

(continued)

## EXERCISE 12.2 (continued)

**3**



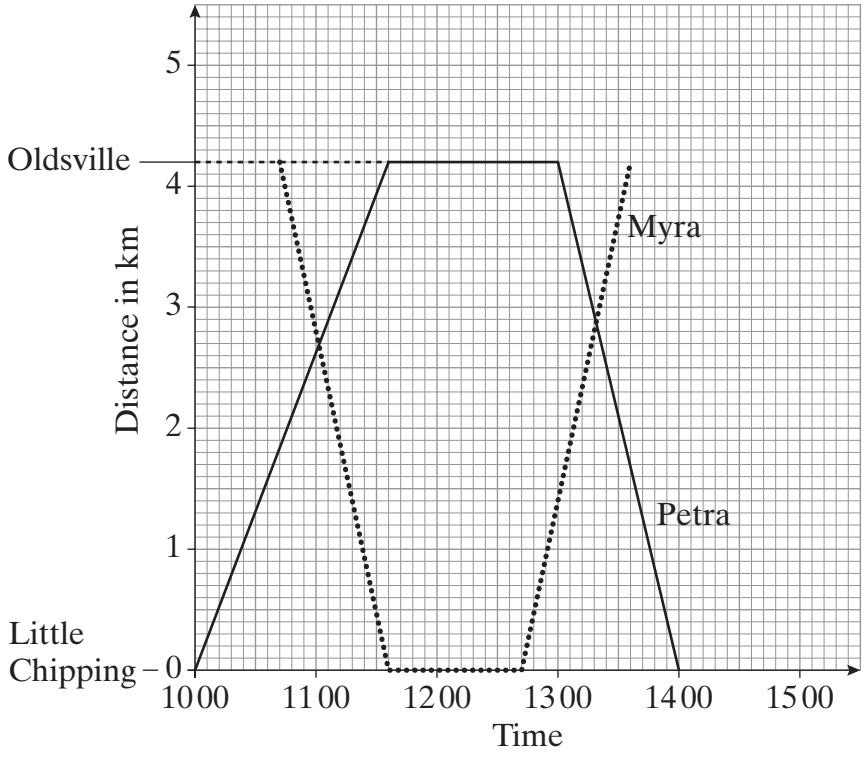

**4**



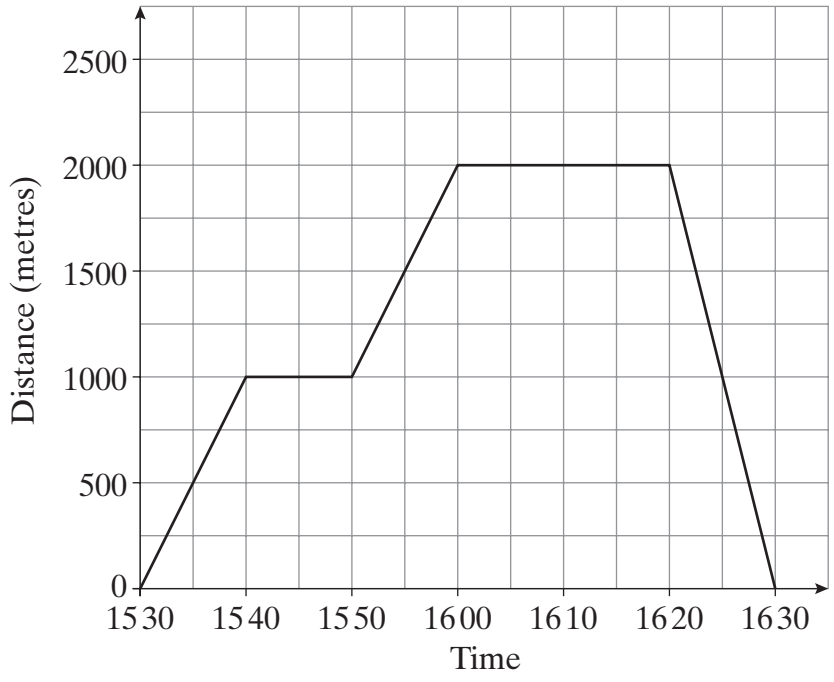

(continued)

## EXERCISE 12.2 (continued)

**5**



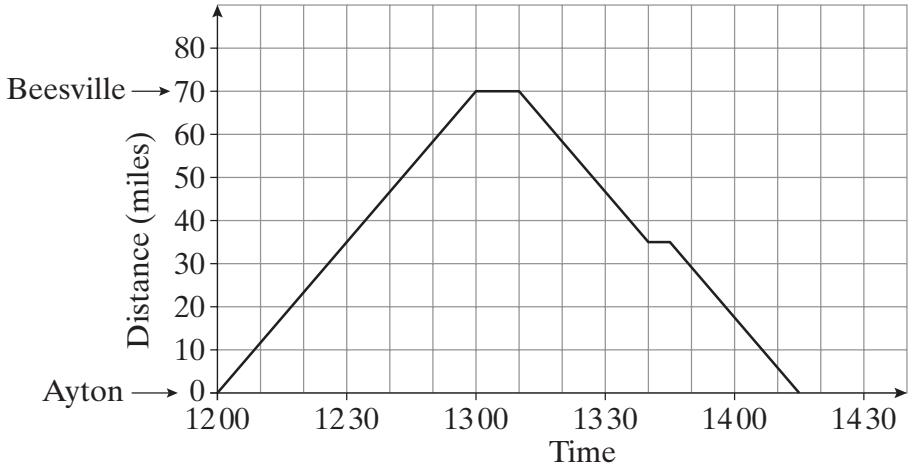

**6**



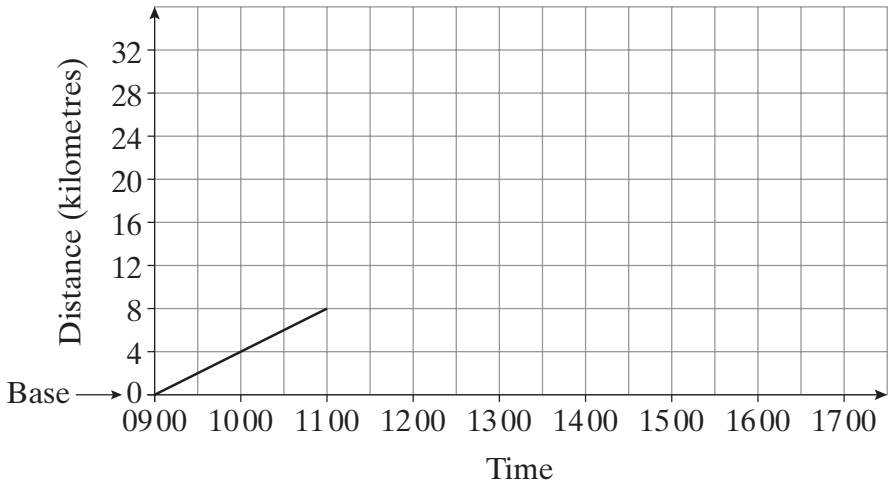

(continued)

## EXERCISE 12.2 (continued)

**7**




**8**




**9**