S4 Credit Home Exercises: Answers

Ex 1

1. $2\frac{1}{12}$ 2. 10

3. (a) $DE = 3\,\text{cm}$

   (b) show $EF^2 + DF^2 = DE^2$, by the Converse of Pyth. Thm. etc

4. No, time taken 1 hour 12 mins so arrives 2 mins late at 15 07.

or No, top speed is under the required 977 km/hr.

or No, maximum distance travelled 1108 km is less than required.

5. $x = -6$

Ex 2

1. (a) $(3a - 5)(3a + 5)$ (b) $4(w - 3)(w + 3)$

2. (a) $12x + 7y = 200$ (b) $8x + 9y = 220$ (c) standard 5p , peak 20p

3. (a) $r = \dfrac{p+t}{n}$ (b) $r = \sqrt{w - h}$

4. (a) $7 \cdot 52 \times 10^{23}$ (b) $6 \cdot 65 \times 10^{-21}$

5. Yes. Worst case succeeds; oil works has level 118 units, under 120 units.

Ex 3

1. $5\frac{11}{30}$ 2. $x^3 + x^2 - x + 15$

3. (a) $(t - 2)(t + 5)$ (b) $(2m - 5)(m + 1)$

4. 41 years

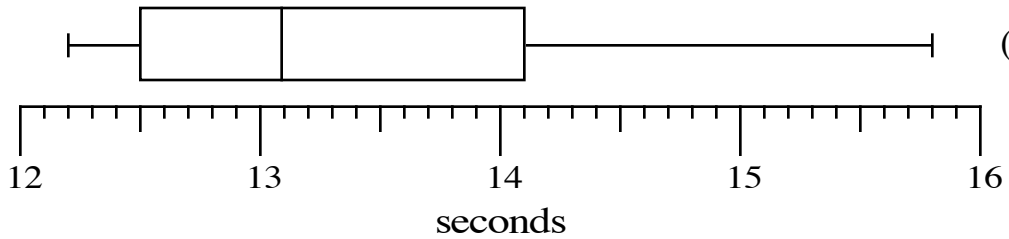
5. $AC = 1 \cdot 5\,\text{m}$, show $AC^2 + BC^2 = AB^2$, by the Converse of Pyth. Thm. etc

6. No; angle, 84·5°, is less than 85°

Ex 4

1. $1\frac{1}{4}$ 2. 20 3. (a) $w = \sqrt{t - 2n}$ (b) $w = \frac{h - p}{2}$ 4. 9ab

5. (a)



(b) 0·8

Ex 5

1. $3\frac{3}{8}$ 2. (a) $DE = 12\,\text{cm}$ (b) $81\,\text{cm}^2$ (c) $45\,\text{cm}^2$

3. (a) $(a - 9)(a + 2)$ (b) $(3p - 2)(p + 3)$ 4. $x = 3$, $y = -1$

5. No; angle, 64·2°, is not between 65° and 75°

Ex 6

1. a = 8 , b = -4 , c = 2 2. (a) $(a - 4c)(a + 4c)$ (b) $4(m - 2)(m + 2)$

3. $h = \sqrt{\frac{w + t}{4}}$ 4. $x = 3$ 5. (a) $1228\,\text{cm}^2$ (b) $36850\,\text{cm}^3$

Ex 7

1. d = 54 2. 2.14 pm 3. $8 \cdot 06 \times 10^{22}$ 4. 103 km

5. (a) $AC = 24\,\text{cm}$

   (b) show $AC^2 + CD^2 = AD^2$, by the Converse of Pyth. Thm. etc

Ex 8

1. a = 3 , b = 4 , c = -6 2. $x = 14{\cdot}9$, $y = 51{\cdot}0$

3. £84 4. (a) $3200\,\text{cm}^2$ (b) $256000\,\text{cm}^3$

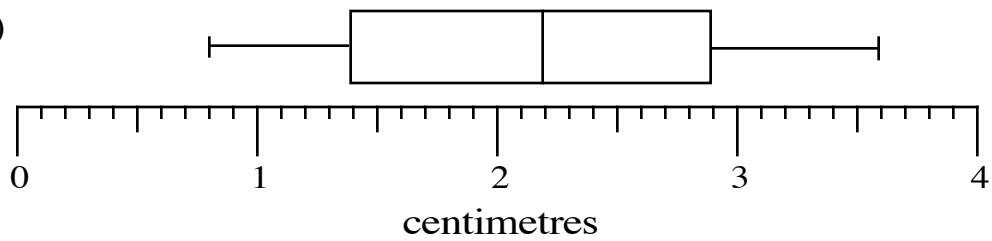
Ex 9

1. $4\frac{1}{12}$ 2. (a) $(x-2y)(x+6y)$ (b) $(5t-2)(t+3)$

3. (a) $t=\dfrac{p-w}{n}$ (b) $t=mr^2-g$ 4. £78540

5. (a) $L=0.8$, $Q_1=1\cdot4$, $Q_2=2\cdot2$, $Q_3=2\cdot9$, $H=3\cdot6$

(b)



(c) 0·75

Ex 10

1. (a) 2 (b) $y=2x-4$ (c) $R(2,0)$ 2. (a) 11 (b) 26 (c) $t=4$

3. $x>6$ 4. (a) $A=16$, $B=46$ (b) 75% 5. $5(t-1)(t+4)$

Ex 11

1. (a) $\frac{1}{2}$ (b) $y=\frac{1}{2}x+3$ (c) $P(-6,0)$ 2. 19

3. (a) 6 (b) -3 (c) $c=9$ 4. y > -4 5. 13·3 metres

Ex 12

1. (a) 0·6 (b) $M=0\cdot6T+14$ (c) 50 grams

2. (a) $3a+12$ (b) $3a$ (c) 12 3. (a) 26·2 cm (b) 157·1 cm^2

4. $p<5$ 5. $t(2t-3)(2t+3)$

Ex 13

1. (a) -2 (b) $y = -2x + 6$ (c) $P(3, 0)$ 2. (a) 21 (b) 5 (c) $t = 0$

3. tangent , ABE = 90° , DBE = 90° - 65° = 25°

semicircle , BDE = 90° , Δ sum , BED = 180° - 90° - 25° = 65°

4. (a) $\frac{13}{25}$ (b) 48

Ex 14

1. (a) a = 3 , b = 2 (b) P (45°, 3) , Q (225°, 3) , R (135°, -3)

2. $x = -7$ or $x = 2$ 3. 4·47 metres

4. $x = 36{\cdot}9$ or $x = 143{\cdot}1$ 5. exactly 36 cm

Ex 15

1. (a) a = 6 , b = 3 (b) P (60°, -6) , Q (180°, -6) , R (120°, 6)

2. $x = -1{\cdot}27$ or $x = 2{\cdot}77$ 3. 143·2°

4. $x = 113{\cdot}6$ or $x = 246{\cdot}4$ 5. (a) $BC = 10$ cm (b) 60 cm^2

Ex 16

1. A 66·4° , B 293·6° 2. $x < -\frac{8}{3}$

3. $A(-2, 0)$, $B(6, 0)$, $C(2, -16)$, $D(0, -12)$

4. a = -2 , b = 5 5. £64000