Student Text *UNIT 27 Coordinates* Answers

27.1 Positive Coordinates

1. A (0, 4), B (1, 3), C (2, 1), D (3, 0), E (4, 3), F (5, 2)

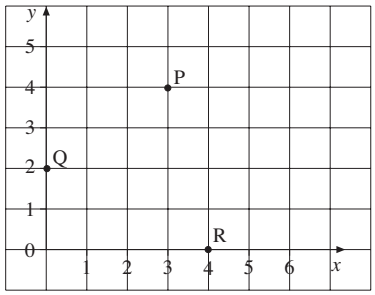
2. Rocky Point (2, 8) , Landing Stage (2, 2) , Old Ben's Cottage (3, 5)
Old Tower (4, 3) , Café (7, 6) , Sandy Beach (9, 3) , Camp Site (10, 6)

3. (a) rectangle (b) triangle (c) rhombus
(d) pentagon (e) hexagon

4. (a) J : (1, 2), (1, 1), (2, 1), (2, 5), (1, 5) and (3, 5)
S : (4, 1), (6, 1), (6, 3), (4, 3), (4, 5) and (6, 5)

5. (a) (2, 3), (3 2), (4, 3), (5, 2), (6, 3)

6. (a)



(b) (i) A (2, 1) (ii) (B) (1, 5)

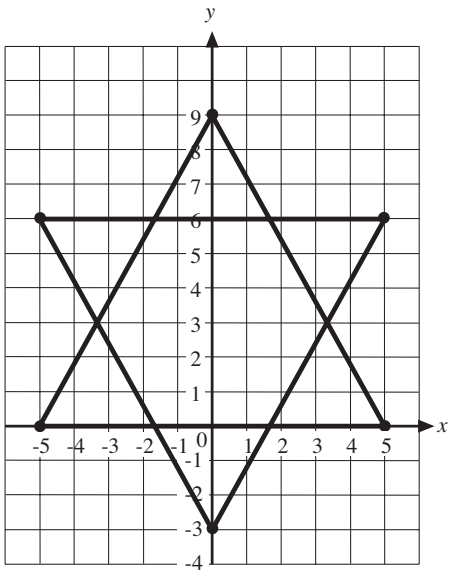
27.2 Coordinates

1. A (2, 5), B (4, 3), C (2, 1),
D (2, –2), E (5, –3), F (3, – 4),
G (–5, 4), H (–3, 3), I (–5, 2),
J (– 4, –2), K (–2, –3), L (–6, –5)

2. (a) (5, – 4), (6, –3) and (–6, –5)
(b) Albany to Alice Springs
(c) Broome to Perth

3. (a) (0, 4), (12.5, –5.5), (–12, –1), (–6.5, –3.5), (–1, –7)
(b) (–1, 1) (c) (10, 0) to (–7.5, –10.5)
(d) (–17, –2) (e) (10, 7)

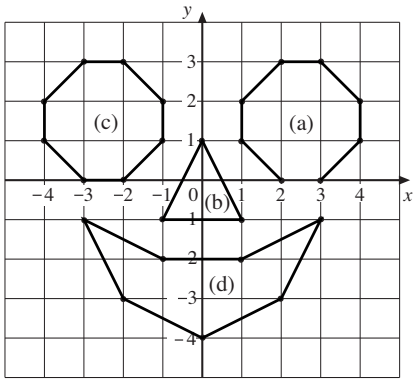
4. (a) triangle
(b) six-pointed star (see diagram)



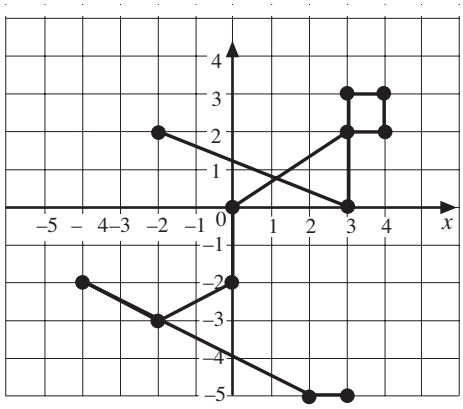
Student Text *UNIT 27 Coordinates* Answers

27.2

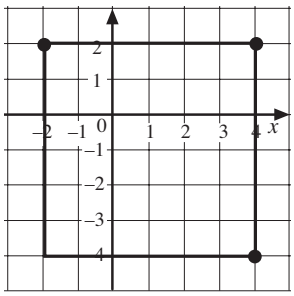
5.



6. (b)

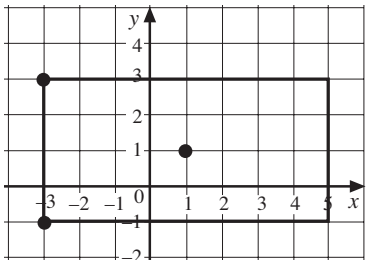


7. (a)



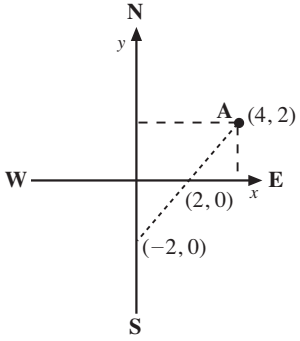
(b) $(1, -1)$

8. (a)



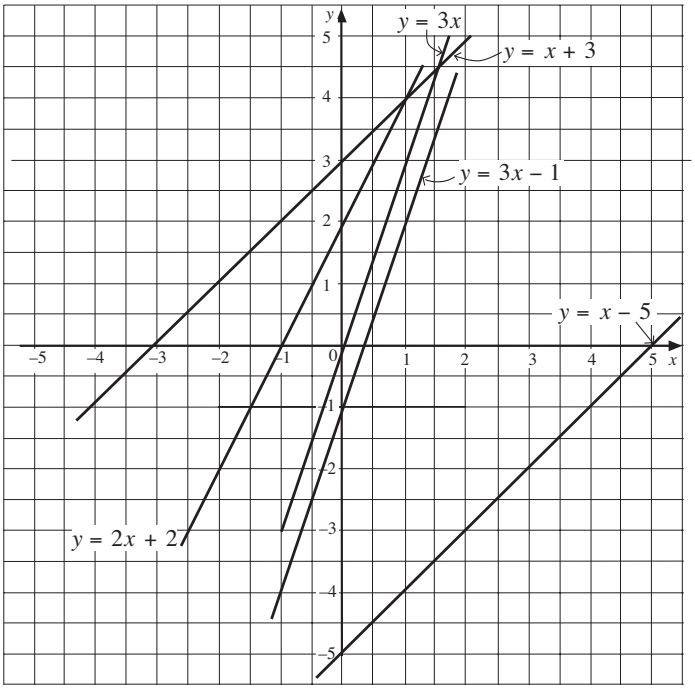
(b) $(5, -1)$, $(5, 3)$

9. (a) 2 units (b) 4 units (c) $2 \times \sqrt{8} = 4\sqrt{2}$



Student Text *UNIT 27 Coordinates* Answers

27.3 Plotting Straight Lines

1. (a) (4, 6), (1, 3), (–3, 1) (e) (0, 2)
2. (a) (3, 7), (1, 3), (–2, –3) (d) Yes
3. (a) (3, 7), (0, –2), (–2, –8) (d) No
4. 

5. (a)

m	0	10	25
p	0	40	100

(b) (0, 0), (10, 40), (25, 100)

(d)

	Mark	*Percentage*
Tyson	15	60
Carlyle	21	84
Shanice	18	72
Carl	20	80
Winston	15	60

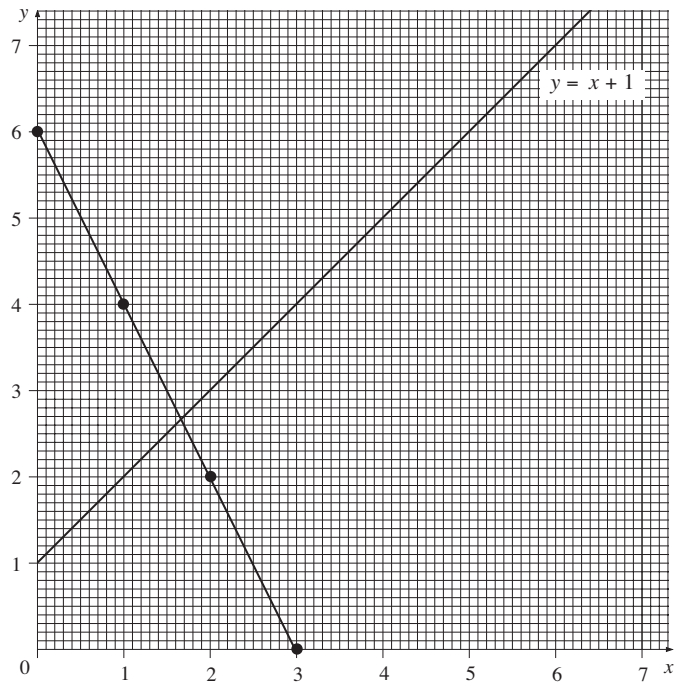
6. (a)

°C	0	20	100
°F	32	68	212

(c) about 27 °C (d) 86 °F

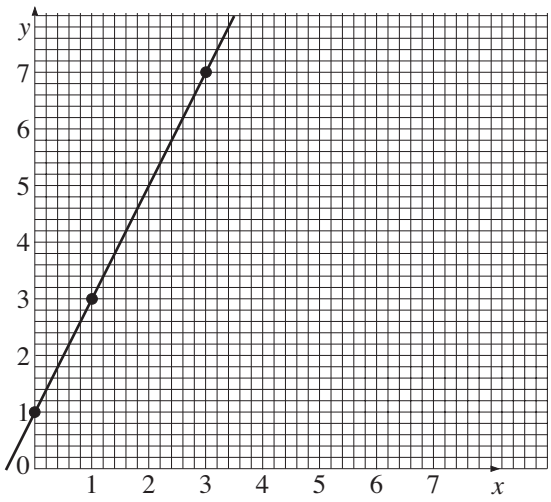
Student Text *UNIT 27 Coordinates* Answers

27.3

7. 

8. (a)

x	y
0	1
1	3
3	7

(b) 

(c) $y = 2x + 1$ (d) 4

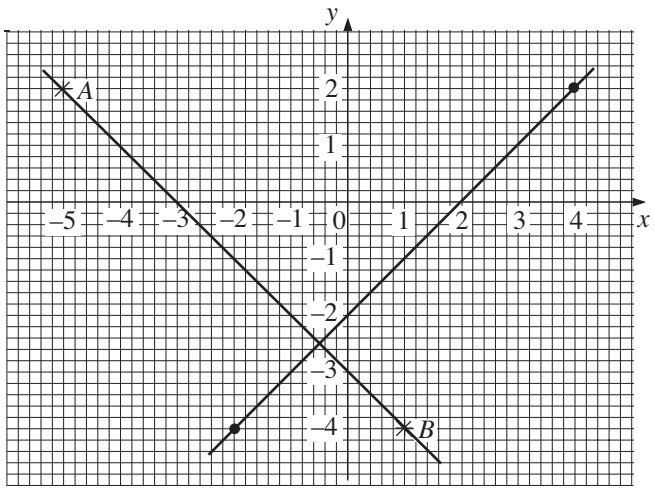
9. (a) $A\ (-5, 2)$, $B\ (1, -4)$

(b)

x	-2	0	2	3	4
y	-4	-2	0	1	2

(c) see graph

(d) $\left(-\frac{1}{2}, -\frac{5}{2}\right)$



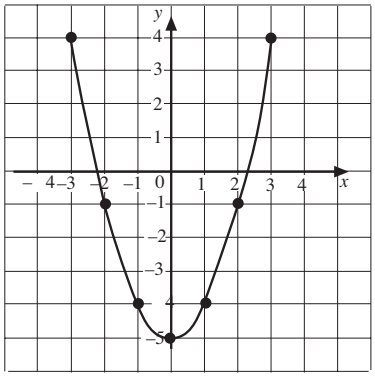
Student Text *UNIT 27 Coordinates* Answers

27.4 Plotting Curves

1. (a)

x	–3	–2	–1	0	1	2	3
y	4	–1	– 4	–5	– 4	–1	4

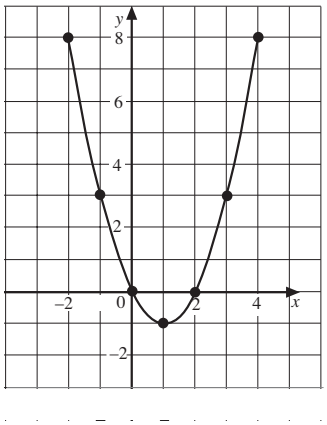
(b) (–3, 4), (–2, –1), (–1, – 4), (0, –5), (1, – 4), (2, –1), (3, 4)



2. (a)

x	–2	–1	0	1	2	3	4
y	8	3	0	–1	0	3	8

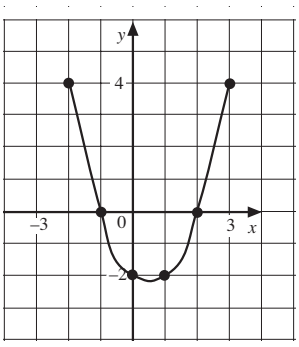
(b)



3. (a)

x	–2	–1	0	1	2	3
y	4	0	–2	–2	0	4

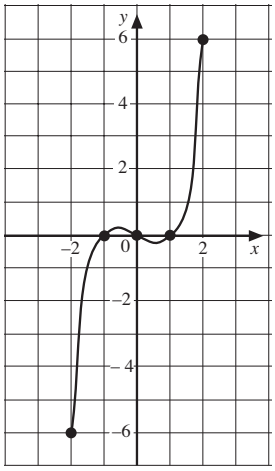
(b) 0.5 (c) –2.25



4. (a)

x	–2	–1	0	1	2
y	–6	0	0	0	6

(b)



(c) (–0.5, 0.375), (0.5, –0.375)

Student Text *UNIT 27 Coordinates* Answers

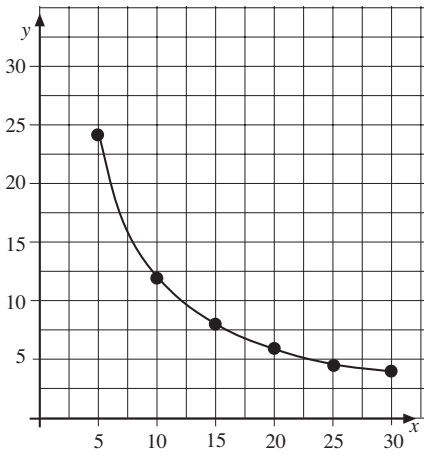
27.4

5. (a) $x\,y$ = area = 120 cm^2

(b)

x	5	10	15	20	25	30
y	24	12	8	6	4.8	4

(c)



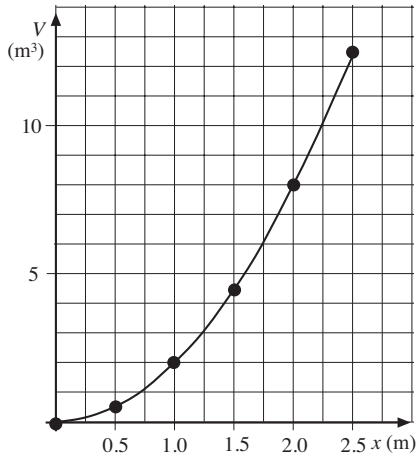
(d) width about 17 cm

(e) about 8.6 cm

6. (a) Volume = $2 \times x \times x = 2x^2$

(b)

x	0	0.5	1.0	1.5	2.0	2.5
V	0	0.5	2.0	4.5	8.0	12.5

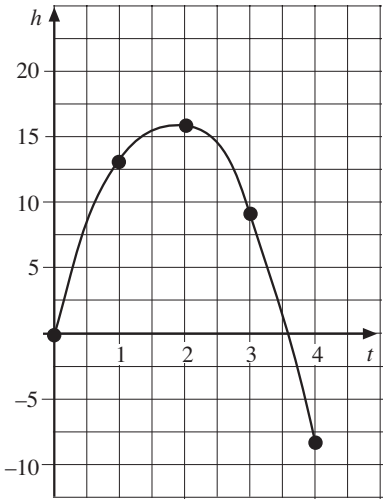


(c) about 9.7 m^3

(d) (i) 2.2 m (ii) 1.6 m

7. (a)

t	0	1	2	3	4
h	0	13	16	9	–8



(b) about 3.6 seconds

(c) just over 16 metres

8. (a)

x	–3	–2	–1	0	1	2	3
y	0	1	2	3	4	5	6

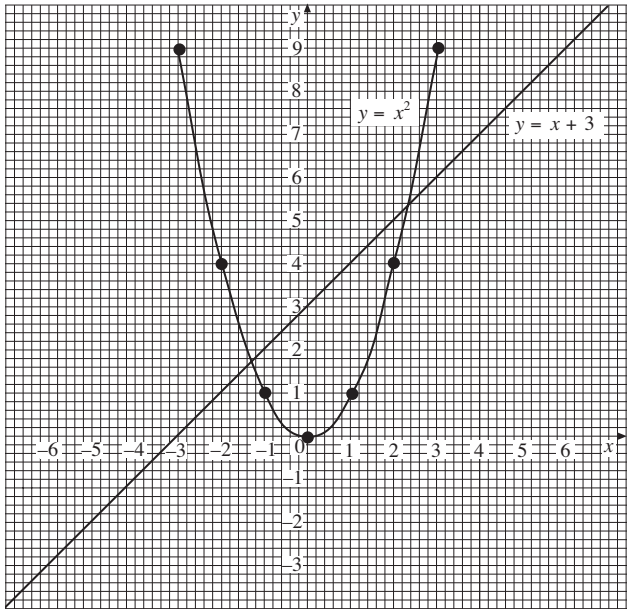
(b)

x	–3	–2	–1	0	1	2	3
y	9	4	1	0	1	4	9

Student Text *UNIT 27 Coordinates* Answers

27.4

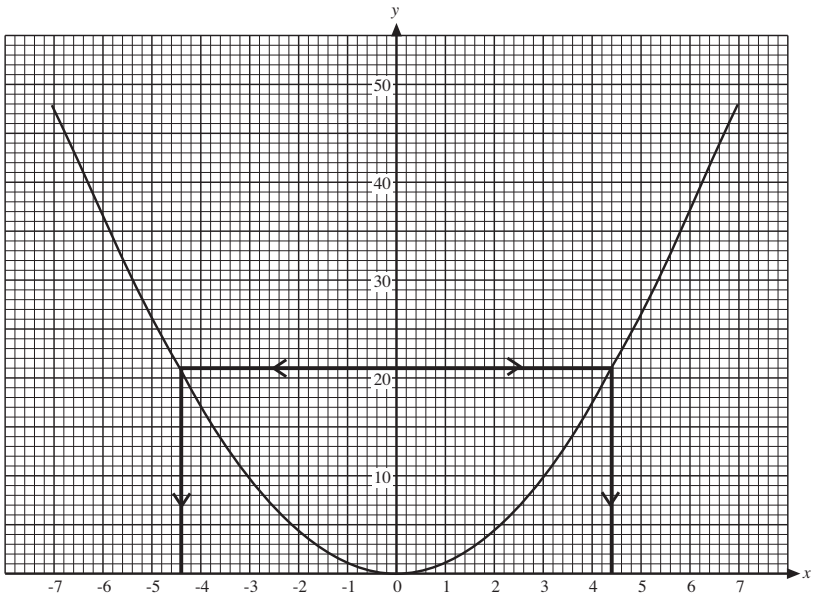
(c)



9. (a)

x	–5	5	6
y	25	25	36

(b)



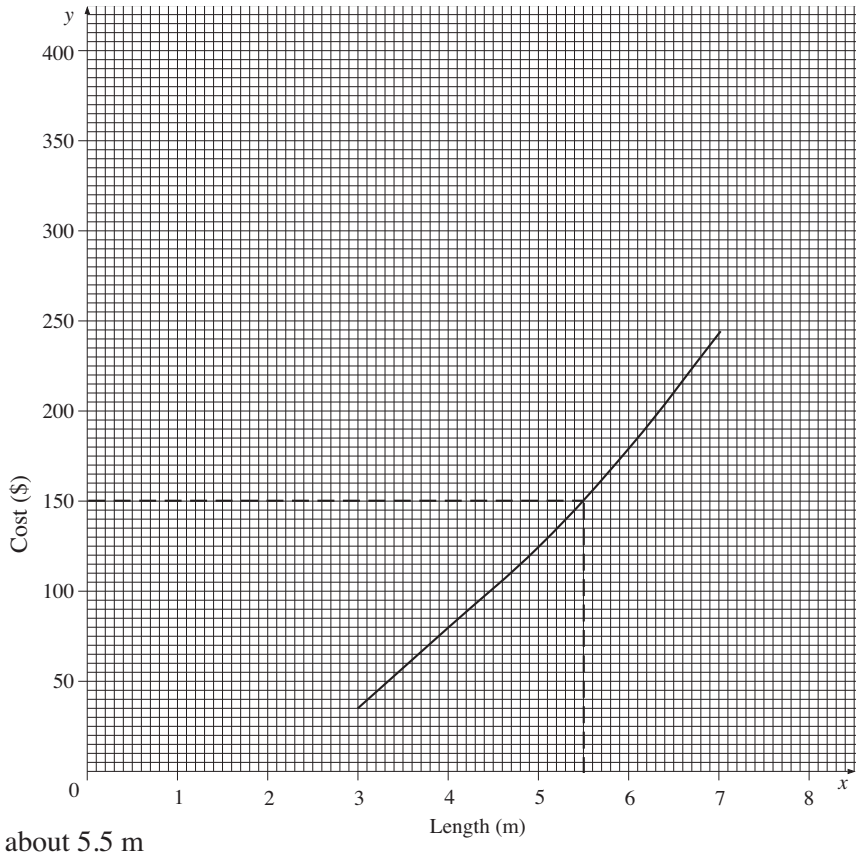
(c) $x \approx -4.4$ or 4.4

Student Text *UNIT 27 Coordinates* Answers

27.4

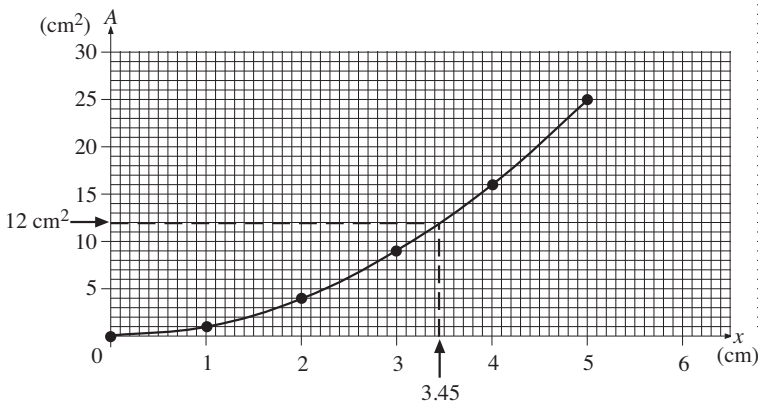
10. (a) \$320

(b)



(c) about 5.5 m

11. (a)

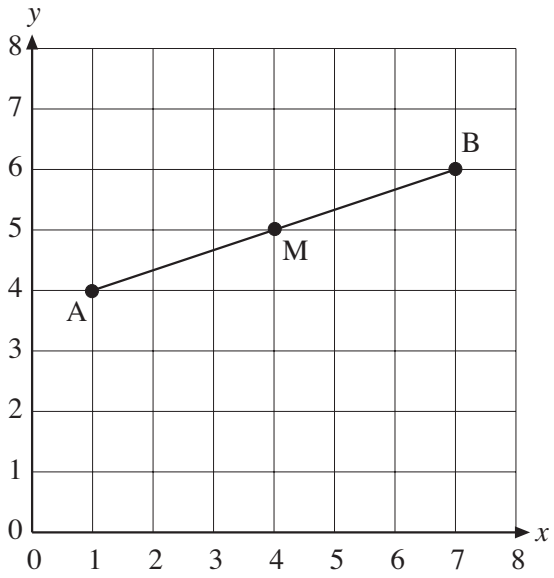


(b) $A = x^2$ (c) about 3.45 cm

Student Text *UNIT 27 Coordinates* Answers

27.5 Mid-Points of Line Segments

1. (a) and (b)



(c) The mid-point $M = (4, 5)$

2. (a) (4, 6) (b) (7, 5.5) (c) (8.5, 7.5) (d) (9, 5)
   (e) (6, 2) (f) (8.5, 4) (g) (10.5, 3.5) (h) (9, 1.5)
3. (a) (6, 9) (b) (12, 5) (c) (6, 3) (d) (8, 7)
   (e) (3.5, 2.5) (f) (3.5, 6.5) (g) (7.5, 8.5) (h) (18.5, 2.5)
4. (a) (4, 4) (b) (–0.5, 5) (c) (0.5, –0.5) (d) (4, –1)
   (e) (3, 1) (f) (–0.5, –3.5) (g) (–4, 0.5) (h) (–0.5, 0)
5. (a) (3, –1.5) (b) (0.5, –2.5) (c) (– 5, –6.5) (d) (1.5, –1)
   (e) (0.5, 2.5) (f) (7, –6) (g) (4.5, –5.5) (h) (–1, –7)
6. (a) D = (0, 6, 0) and G = (7, 6, 5)

   In 3-dimensions, to find a mid-point we average the coordinates, just as in 2-dimensions.

   The mid-point of DG is therefore $\left(\frac{0+7}{2}, \frac{6+6}{2}, \frac{0+5}{2}\right) = (3.5,\ 6,\ 2.5)$

   (b) (i) (3.5, 0, 0) (ii) (3.5, 6, 0)
   (iii) (0, 6, 2.5) (iv) (7, 3, 5)

7. (a) (5, 6, 4) (4, 5, 6) (b) (4.5, 5.5, 5)

Student Text *UNIT 27 Coordinates* Answers

27. 6 Three-Dimensional Coordinates

1. (a) A (0, 0, 0) B (3, 0, 0) C (3, 5, 0)
D (0, 5, 0) E (0, 0, 2) F (3, 0, 2)
G (3, 5, 2) H (0, 5, 2)

(b) I (0, 0, 0) J (6, 0, 0) K (6, 2, 0)
L (0, 2, 0) M (0, 0, 4) N (6, 0, 4)
O (6, 2, 4) P (0, 2, 4)

(c) Q (1, 1, 0) R (4, 1, 0) S (4, 3, 0)
T (1, 3, 0) U (1, 1, 4) V (4, 1, 4)
W (4, 3, 4) X (1, 3, 4)

(d) A (1, 2, 0) B (5, 2, 0) C (5, 3, 0)
D (1, 3, 0) E (1, 2, 5) F (5, 2, 5)
G (5, 3, 5) H (1, 3, 5)

2. (a) A (1, 1, 0) B (5, 1, 0)
C (5, 4, 0) D (1, 1, 4)

(b) D (2, 1, 0) E (6, 1, 0)
F (1, 3, 0) G (1, 3, 4)

(c) H (1, 2, 0) I (4, 1, 0) J (5, 3, 0)
K (1, 4, 0) L (1, 2, 5)

(d) M (0, 1, 0) N (5, 1, 0) O (5, 3, 0)
P (0, 3, 0) Q (0, 3, 4) R (5, 3, 4)

3. A (0, 0, 0) B (3, 0, 0)
C (0, 4, 0) D (0, 0, 5)

4. A (0, 0, 0) B (7, 0, 0) C (7, 6, 0)
D (0, 6, 0) E (0, 0, 3) F (7, 0, 3)
H (0, 6, 3)

5. A (0, 0, 0) B (7, 0, 0) C (7, 4, 0)
D (0, 4, 0) E (0, 4, 5) F (7, 4, 5)

6. A (0, 0, 0) B (4, 0, 0) C (0, 5, 0)
D (0, 0, 8) E (4, 0, 8) F (0, 5, 8)