Mock Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. In a table of values for a pattern, $P = 12$ when $n = 3$. Determine the equation that might represent the pattern.
a. $P = 4n + 6$ b. $P = 24 - 3n$ c. $P = 4(6 - n)$ d. $P = 4(n + 6)$

____ 2. The pattern in this table continues. Determine the expression that relates the number of triangles to the figure number.

Figure, *f*	1	2	3	4	5
Number of Triangles, *t*	2	4	6	8	10

a. $2f$ b. $2 + t$ c. $2t$ d. $2 + f$

____ 3. This pattern of unit squares continues. Which equation below relates the number of squares, n, to the figure number, f?

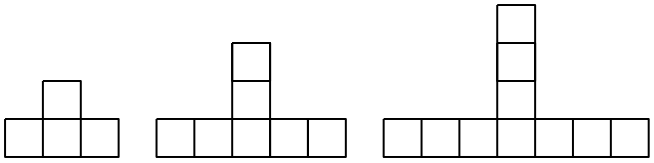


Figure 1 Figure 2 Figure 3

i) $n = 3f + 4$
ii) $n = 3f + 1$
iii) $f = 3n + 1$
iv) $f = 4 + 3n$

a. iii b. ii c. iv d. i

____ 4. Determine an equation that relates the number of circles, C, to the figure number, n.

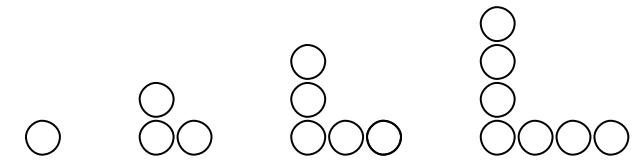
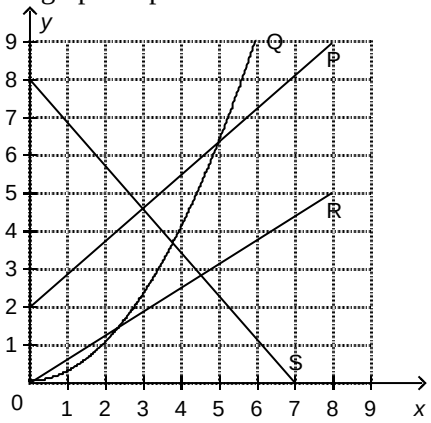


Figure 1 Figure 2 Figure 3 Figure 4

a. $C = 2n - 1$ b. $C = n \times n - 1$ c. $C = 2n + 1$ d. $C = n + 1$

____ 5. Which graphs represent a linear relation?



a. P only b. P, R, and S c. P and S d. P and R

____ 6. Which tables of values represent a linear relation?

i)

x	1	2	3	4	5
y	4	7	12	19	28

ii)

x	0	1	2	3	4
y	0	5	10	15	20

iii)

x	1	2	3	4	5
y	5	9	13	17	21

iv)

x	0	1	2	3	4
y	12	11	10	9	8

a. ii, iii, and iv b. ii and iii c. All of these d. i and iv

____ 7. Complete the table of values.

$y = 9 - 5x$

x	2	4	6	8
y				

a.

x	2	4	6	8
y	4	–1	–6	–11

c.

x	2	4	6	8
y	4	8	12	16

b.

x	2	4	6	8
y	8	16	24	32

d.

x	2	4	6	8
y	–1	–11	–21	–31

____ 8. This table of values represents a linear relation. Complete the table.

x	1	3	5	7
y	9	17		

a.

x	1	3	5	7
y	9	17	25	33

c.

x	1	3	5	7
y	9	17	19	21

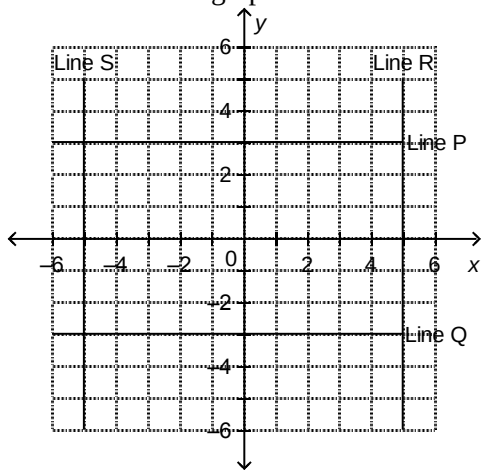
b.

x	1	3	5	7
y	9	17	21	25

d.

x	1	3	5	7
y	9	17	45	63

____ 9. Which line is the graph of $x + 5 = 0$?



a. Line R b. Line Q c. Line P d. Line S

____ 10. For the equation $4x - 2y = 8$, make a table of values for $x = -2$, 0, and 2.

a.

x	–2	0	2
y	–8	–4	0

b.

x	–2	0	2
y	–8	0	1

c.

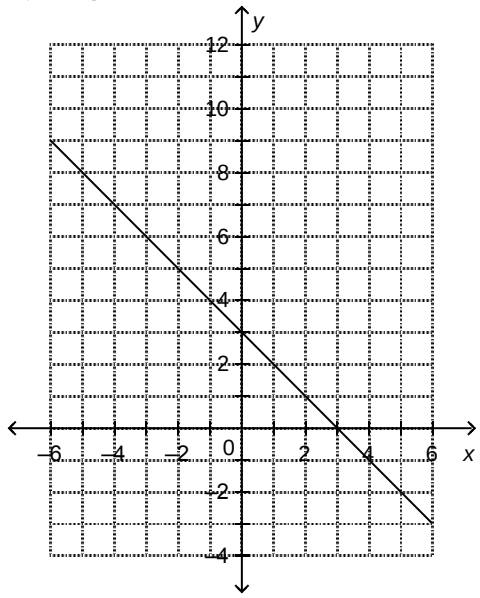
x	–2	0	2
y	8	4	1

d.

x	–2	0	2
y	0	–4	8

____ 11. Which equation describes the graph?

i) $x + y = 3$
ii) $x - y = 3$
iii) $y - x = 3$
iv) $x + y = -3$



a. i b. ii c. iii d. iv

____ 12. Which equations describe vertical lines?

i) $x + 5 = 12$
ii) $y - 12 = 5$
iii) $x + y = 5$
iv) $12x = 5$

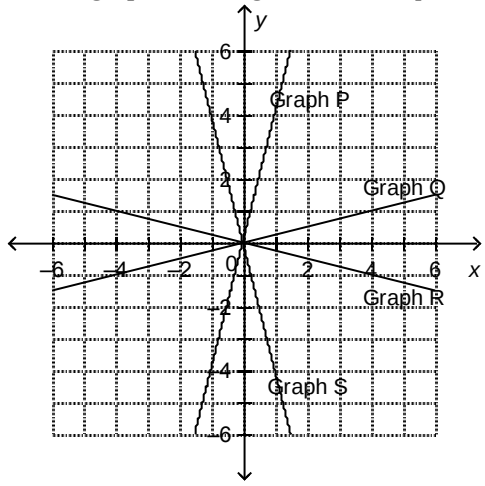
a. i and iii b. ii and iii c. ii and iv d. i and iv

____ 13. Which equations describe oblique lines?

i) $5x + 9 = 14$
ii) $5x + 9y = 14$
iii) $9y + 5 = 14$
iv) $5x = 9y$

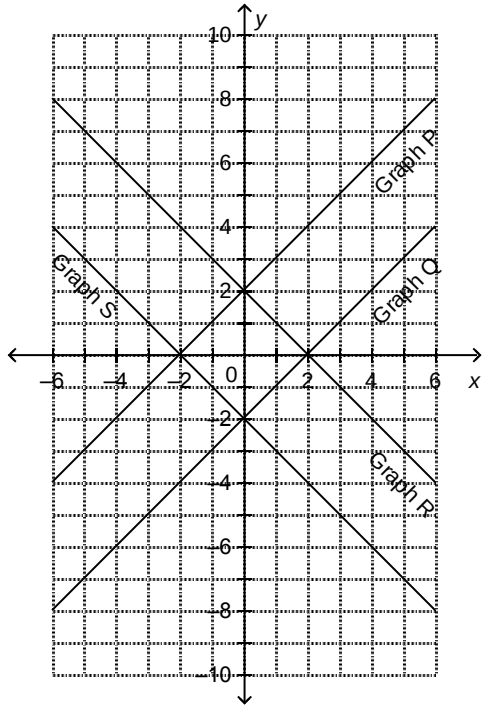
a. iii and iv b. ii and iv c. i and iii d. i and iv

____ 14. Which graph on this grid has the equation $y = 4x$?



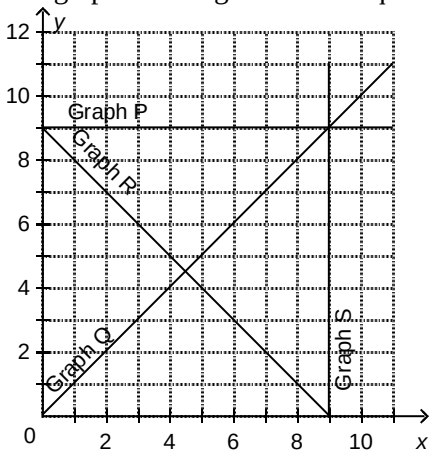
a. Graph Q b. Graph R c. Graph S d. Graph P

____ 15. Which graph on this grid has the equation $y = x - 2$?



a. Graph S b. Graph Q c. Graph P d. Graph R

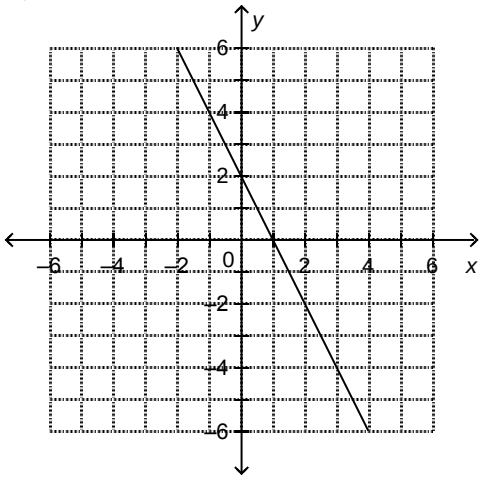
____ 16. Which graph on this grid has the equation $x = 9$?



a. Graph S b. Graph Q c. Graph R d. Graph P

____ 17. Which equation describes the graph below?

i) $y = 2x$
ii) $y = 2x + 2$
iii) $y = -x + 2$
iv) $y = -2x + 2$



a. iii b. ii c. iv d. i

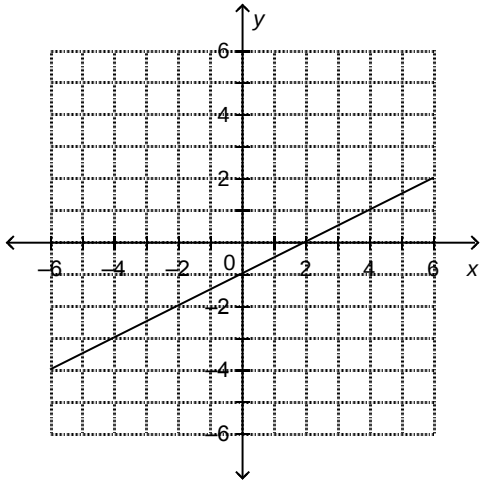
____ 18. Which equation describes the graph below?

i) $y = \frac{1}{2}x + 1$

ii) $y = \frac{1}{2}x - 1$

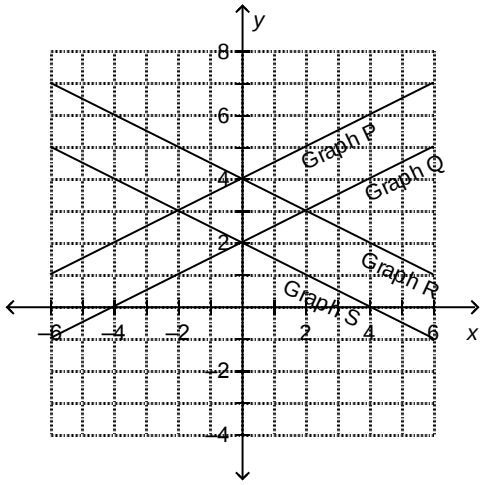
iii) $y = -2x - 1$

iv) $y = 2x - 1$



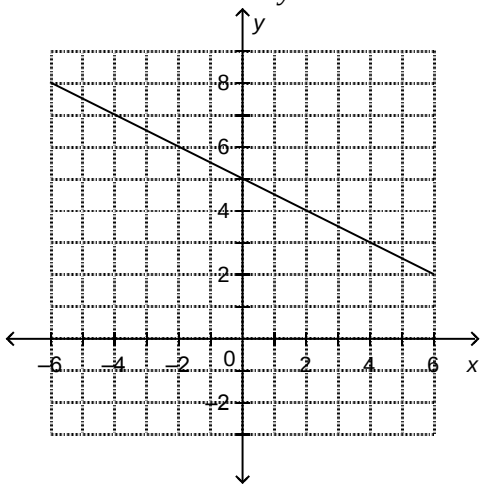
a. iii b. i c. ii d. iv

____ 19. Which graph on this grid has the equation $x + 2y = 4$?



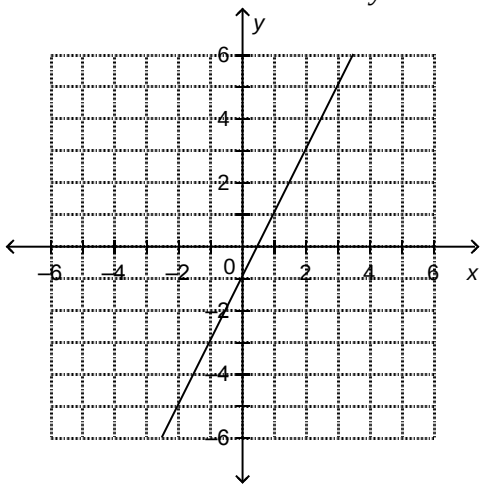
a. Graph Q b. Graph P c. Graph S d. Graph R

____ 20. This graph represents a linear relation.
Determine the value of y when $x = 3$.



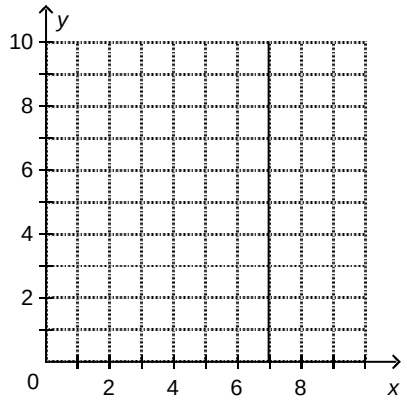
a. 5 b. 6.5 c. 3.5 d. 10

____ 21. This graph represents a linear relation.
Determine the value of x when $y = –2$.



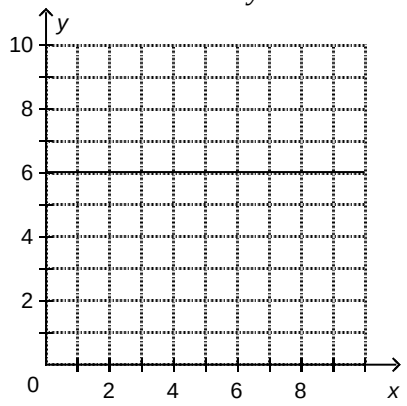
a. –1 b. –0.5 c. 0.5 d. –1.5

____ 22. This graph represents a linear relation.
Determine the value of x when $y = 5$.



a. 12 b. 5 c. 0 d. 7

____ 23. This graph represents a linear relation.
Determine the value of y when $x = 9$.



a. 15 b. 6 c. 9 d. 0

Short Answer

24. In a table of values for a pattern, $P = 17$ when $n = 2$. Which equation might represent the pattern?
i) $P = 17n$
ii) $P = 9n$
iii) $P = 6n + 5$
iv) $P = 17n - 9$

25. The pattern in this table continues. Write an equation that relates the term value to the term number.

Term Number, *t*	1	2	3	4	5
Term Value, *w*	5	8	11	14	17

26. a) Which table of values represents a linear relation?

i)

x	1	2	3	4
y	12	0	–4	–6

ii)

x	1	2	3	4
y	11	7	3	–1

iii)

x	1	2	3	4
y	13	10	5	–2

b) Write an equation that represents the linear relation.

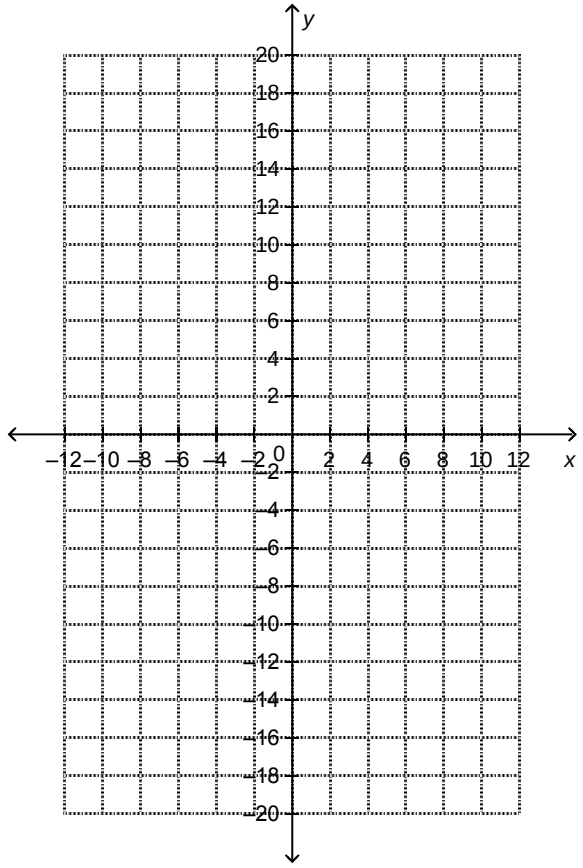
27. a) Create a table of values for the linear relation $y = \frac{1}{2}x - 1$. Use –4, –2, 0, 2, 4 for values of *x*.

x	–4	–2	0	2	4
y					

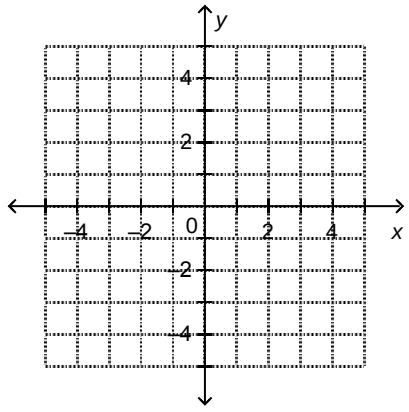
.

28. Create a table of values for the linear relation $y = 4 - 4x$, then graph the relation.
Use values of *x* from 0 to 6.

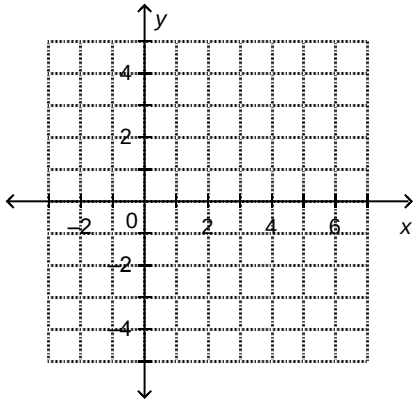
x	0	1	2	3	4	5	6
y							



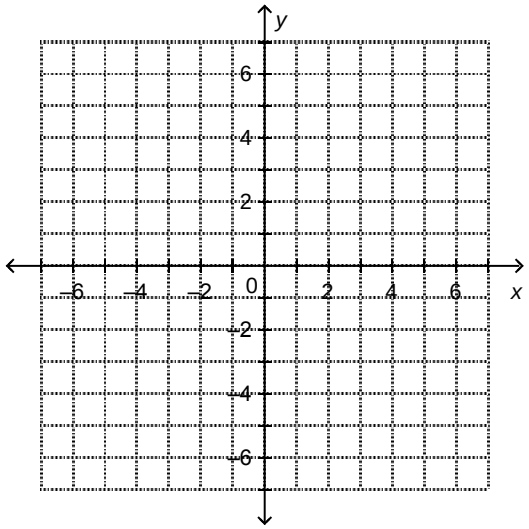
29. Graph the equation $2x - 3 = 3$.



30. Graph the following lines on the same grid. Label the lines.
    i) $y = 2$
    ii) $x = 4$



31. Graph these equations on the same grid. What shape is formed by the lines?
    i) $x = -3$
    ii) $x - 5 = 0$
    iii) $y + 2 = 0$
    iv) $y - 5 = 0$



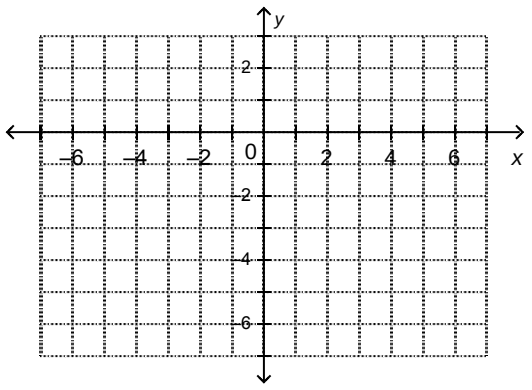
32. a) For each equation, make a table of values for the given values of x.
    i) $x + 2y = -4$; for x = –6, 0, and 4

x	–6	0	4
y			

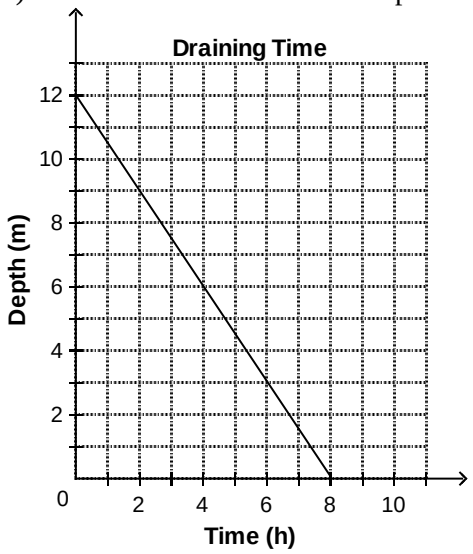
    ii) $x - 3y = 2$; for x = –4, –1, and 5

x	–4	–1	5
y			

    b) Graph the equations on the same grid.



33. This graph shows the depth of water in a tank, in metres, as the water drains out.
    a) Estimate the depth of water after 3 h.
    b) Estimate how much time has passed if there is 8.5 m of water in the tank.



65+5
Answer Section

MULTIPLE CHOICE

1. ANS: C PTS: 1 DIF: Easy
   REF: 4.1 Writing Equations to Describe Patterns LOC: 9.PR1
   TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
2. ANS: A PTS: 1 DIF: Easy
   REF: 4.1 Writing Equations to Describe Patterns LOC: 9.PR1
   TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
3. ANS: B PTS: 1 DIF: Easy
   REF: 4.1 Writing Equations to Describe Patterns LOC: 9.PR1
   TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
4. ANS: A PTS: 1 DIF: Easy
   REF: 4.1 Writing Equations to Describe Patterns LOC: 9.PR1
   TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
5. ANS: B PTS: 1 DIF: Easy REF: 4.2 Linear Relations
   LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
6. ANS: A PTS: 1 DIF: Moderate REF: 4.2 Linear Relations
   LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
7. ANS: D PTS: 1 DIF: Moderate REF: 4.2 Linear Relations
   LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
8. ANS: A PTS: 1 DIF: Moderate REF: 4.2 Linear Relations
   LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
9. ANS: D PTS: 1 DIF: Easy
   REF: 4.3 Another Form of the Equation for a Linear Relation LOC: 9.PR1
   TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
10. ANS: A PTS: 1 DIF: Easy
    REF: 4.3 Another Form of the Equation for a Linear Relation LOC: 9.PR1
    TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
11. ANS: A PTS: 1 DIF: Moderate
    REF: 4.3 Another Form of the Equation for a Linear Relation LOC: 9.PR1
    TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
12. ANS: D PTS: 1 DIF: Moderate
    REF: 4.3 Another Form of the Equation for a Linear Relation LOC: 9.PR1
    TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
13. ANS: B PTS: 1 DIF: Moderate
    REF: 4.3 Another Form of the Equation for a Linear Relation LOC: 9.PR1
    TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
14. ANS: D PTS: 1 DIF: Easy REF: 4.4 Matching Equations and Graphs
    LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
15. ANS: B PTS: 1 DIF: Easy REF: 4.4 Matching Equations and Graphs
    LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
16. ANS: A PTS: 1 DIF: Easy REF: 4.4 Matching Equations and Graphs
    LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
17. ANS: C PTS: 1 DIF: Moderate REF: 4.4 Matching Equations and Graphs
    LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

18. ANS: C PTS: 1 DIF: Moderate REF: 4.4 Matching Equations and Graphs
LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
19. ANS: C PTS: 1 DIF: Moderate REF: 4.4 Matching Equations and Graphs
LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
20. ANS: C PTS: 1 DIF: Easy
REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
21. ANS: B PTS: 1 DIF: Easy
REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
22. ANS: D PTS: 1 DIF: Moderate
REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
23. ANS: B PTS: 1 DIF: Moderate
REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

SHORT ANSWER

24. ANS:
iii

PTS: 1 DIF: Easy REF: 4.1 Writing Equations to Describe Patterns
LOC: 9.PR1 TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
25. ANS:
$w = 3t + 2$

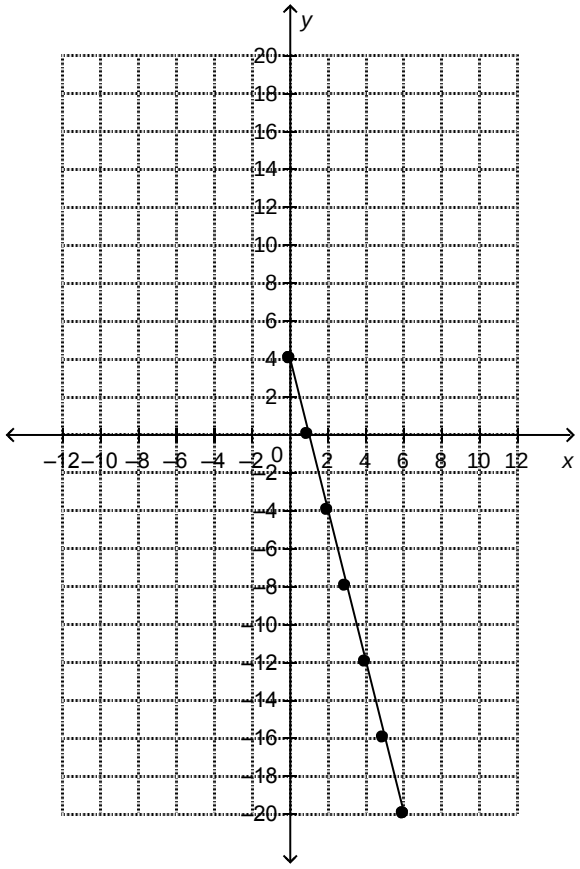
PTS: 1 DIF: Moderate REF: 4.1 Writing Equations to Describe Patterns
LOC: 9.PR1 TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
26. ANS:
a) ii
b) $y = 15 - 4x$

PTS: 1 DIF: Moderate REF: 4.2 Linear Relations
LOC: 9.PR2 TOP: Patterns and Relations (Patterns)
KEY: Conceptual Understanding | Procedural Knowledge
27. ANS:
a)

x	–4	–2	0	2	4
y	–3	–2	–1	0	1

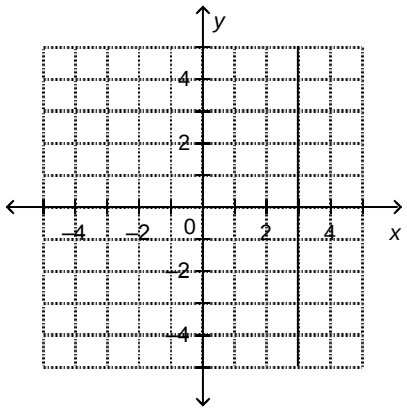
PTS: 1 DIF: Moderate REF: 4.2 Linear Relations
LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
28. ANS:

x	0	1	2	3	4	5	6
y	4	0	–4	–8	–12	–16	–20



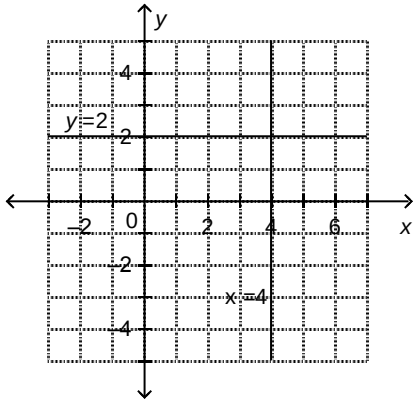
PTS: 1 DIF: Moderate REF: 4.2 Linear Relations
LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

29. ANS:



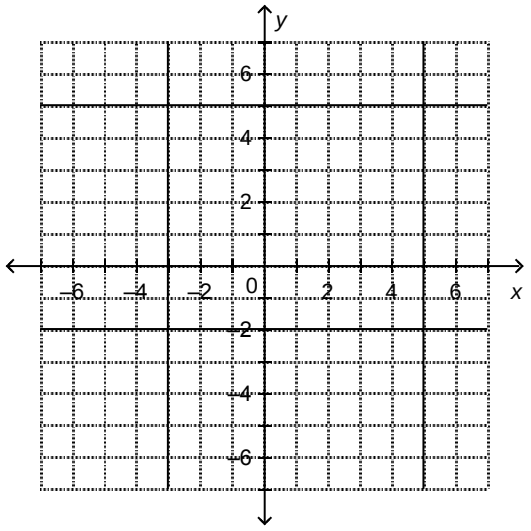
PTS: 1 DIF: Easy REF: 4.3 Another Form of the Equation for a Linear Relation
LOC: 9.PR1 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

30. ANS:



PTS: 1 DIF: Easy REF: 4.3 Another Form of the Equation for a Linear Relation
LOC: 9.PR1 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

31. ANS:



The lines intersect to form a rectangle.

PTS: 1 DIF: Moderate REF: 4.3 Another Form of the Equation for a Linear Relation
LOC: 9.PR1 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

32. ANS:

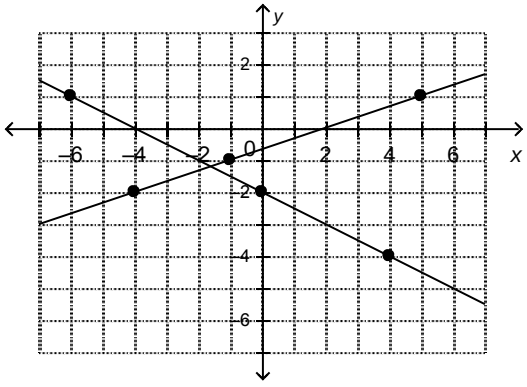
a)

x	–6	0	4
y	1	–2	–4

b)

x	–4	–1	5
y	–2	–1	1

c)



PTS: 1 DIF: Moderate REF: 4.3 Another Form of the Equation for a Linear Relation
LOC: 9.PR1 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

33. ANS:
a) 7.5 m
b) 2.33 h

PTS: 1 DIF: Moderate REF: 4.5 Using Graphs to Estimate Values
LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge