1201 Common Mathematics Assessment
Answer Sheet

Name: _____

Mathematics Teacher: _____

1.	A	B	C	D	21.	A	B	C	D
2.	A	B	C	D	22.	A	B	C	D
3.	A	B	C	D	23.	A	B	C	D
4.	A	B	C	D	24.	A	B	C	D
5.	A	B	C	D	25.	A	B	C	D
6.	A	B	C	D	26.	A	B	C	D
7.	A	B	C	D	27.	A	B	C	D
8.	A	B	C	D	28.	A	B	C	D
9.	A	B	C	D	29.	A	B	C	D
10.	A	B	C	D	30.	A	B	C	D
11.	A	B	C	D	31.	A	B	C	D
12.	A	B	C	D	32.	A	B	C	D
13.	A	B	C	D	33.	A	B	C	D
14.	A	B	C	D	34.	A	B	C	D
15.	A	B	C	D	35.	A	B	C	D
16.	A	B	C	D	36.	A	B	C	D
17.	A	B	C	D	37.	A	B	C	D
18.	A	B	C	D	38.	A	B	C	D
19.	A	B	C	D	39.	A	B	C	D
20.	A	B	C	D	40.	A	B	C	D

Mathematics 1201
Common Mathematics Assessment

Sample 2012

Name: _____

Mathematics Teacher: _____

40 Selected Response — 40 marks
12 Constructed Response — 40 marks

FINAL

80 Marks

FORMULAE

Surface Area

Cylinder	Cone	Sphere
$2\pi r^2 + 2\pi rh$	$\pi r^2 + \pi rs$	$4\pi r^2$

Volume

Pyramid	Cone	Sphere
$\frac{1}{3}Ah$	$\frac{1}{3}\pi r^2 h$	$\frac{4}{3}\pi r^3$

Conversions

1 foot = 12 inches	1 yard = 3 feet	1 mile = 1760 yards
1 inch = 2.54 centimetres ≐ 2.5 centimetres	1 mile ≐ 1.6 kilometres	

Selected Reponse: Choose the appropriate response on the answer sheet or SCANTRON.

1. If 42 bricks of length 5.5 inches each are used to enclose the perimeter of a garden, what is the perimeter of the garden to the nearest tenth of a yard?

   A. 6.4 yards
   B. 7.0 yards
   C. 19.3 yards
   D. 21.0 yards

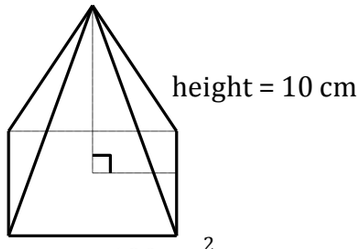
2. Approximately how many centimetres are in 3 yards?

   A. 42 cm
   B. 43 cm
   C. 270 cm
   D. 280 cm

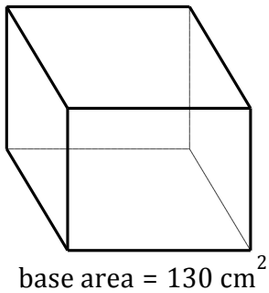
3. Joyce is driving a car in the United States and sees that the speed limit is 45 miles per hour. What should Joyce's speed limit be in kilometres per hour?

   A. 18 km/h
   B. 28 km/h
   C. 72 km/h
   D. 113 km/h

4. Which shape has a volume three times larger than the given pyramid?



A.



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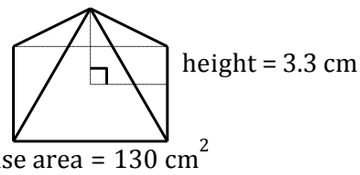

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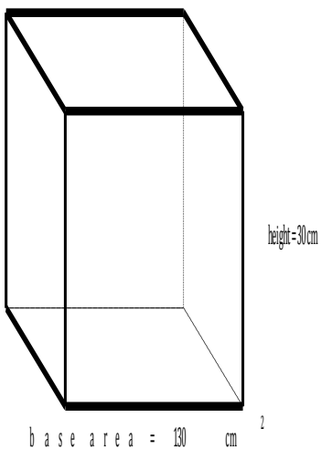
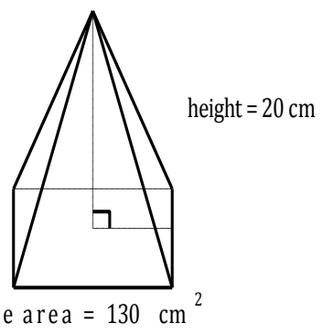


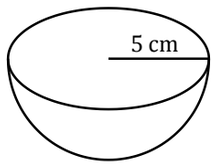
D.



5. Squash balls have a radius of 20 mm.
What is the volume of the smallest cubical box that will hold the ball?

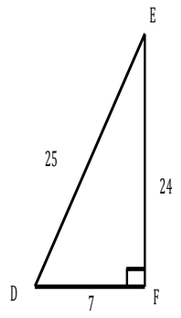
A. 8000 mm^3
B. 33 510 mm^3
C. 64 000 mm^3
D. 268 083 mm^3

6. What is the surface area of the hemisphere?



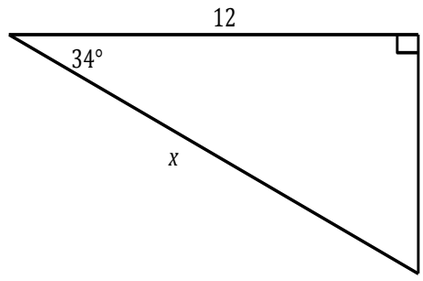
A. 47 cm^2
B. 157 cm^2
C. 236 cm^2
D. 393 cm^2

7. Which ratio represents tan D?



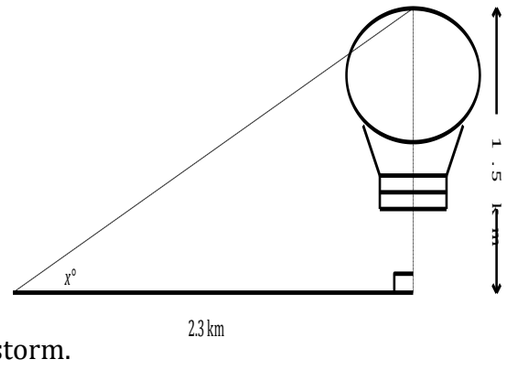
A. $\frac{7}{25}$
B. $\frac{7}{24}$
C. $\frac{24}{25}$
D. $\frac{24}{7}$

8. Which equation should be used to determine the length of side *x*?



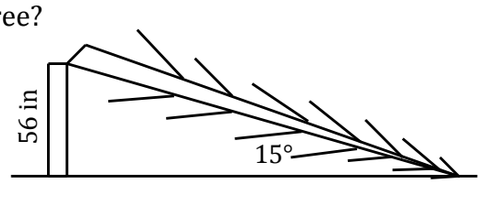
A. $\cos 34° = \frac{x}{12}$
B. $\cos 34° = \frac{12}{x}$
C. $\sin 34° = \frac{x}{12}$
D. $\sin 34° = \frac{12}{x}$

9. What is the measure of the angle of inclination between the ground and the top of a hot air balloon?



A. 33°
B. 41°
C. 49°
D. 57°

10. A tree cracked and fell over during a winter storm.
If the fallen tree formed a 15° angle of inclination and the crack was 56 inches above the ground, what was the original height of the tree?



A. 114 inches
B. 216 inches
C. 264 inches
D. 272 inches

11. Susan is using cereal bars and yogurt tubes for her daughter's birthday party loot bags. Cereal bars are sold in packages of 6 and yogurt tubes are sold in packages of 8. What is the minimum number of loot bags that can be made so that there are no leftovers?

A. 6
B. 8
C. 24
D. 48

12. Which pattern could be used to predict the value of 4^{-4}?

A.

4^3	12
4^2	8
4^1	4
4^0	1
4^{-1}	$\frac{1}{4}$
4^{-2}	$\frac{1}{8}$
4^{-3}	$\frac{1}{12}$

B.

4^3	64
4^2	16
4^1	4
4^0	1
4^{-1}	$\frac{1}{4}$
4^{-2}	$\frac{1}{16}$
4^{-3}	$\frac{1}{64}$

C.

4^3	12
4^2	8
4^1	4
4^0	1
4^{-1}	-4
4^{-2}	-8
4^{-3}	-12

D.

4^3	64
4^2	16
4^1	4
4^0	0
4^{-1}	-4
4^{-2}	-16
4^{-3}	-64

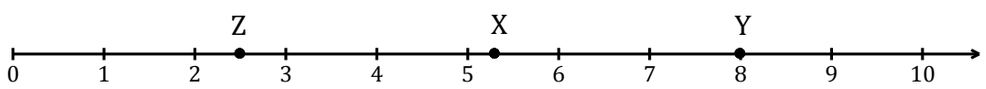
13. Which is equivalent to $2\sqrt{5}$?

A. $5^{\frac{1}{2}}$
B. $10^{\frac{1}{2}}$
C. $20^{\frac{1}{2}}$
D. $50^{\frac{1}{2}}$

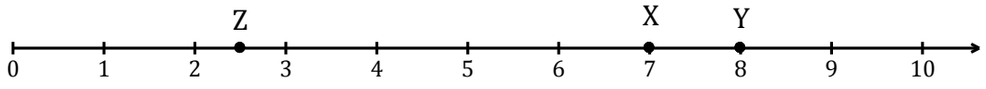
14. Which number line best represents the placement of X, Y, and Z given?

X: $2\sqrt{7}$
Y: $24^{\frac{1}{3}}$
Z: $\sqrt[4]{10}$

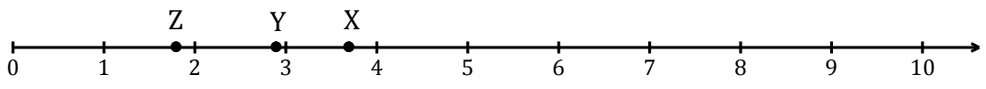
A.



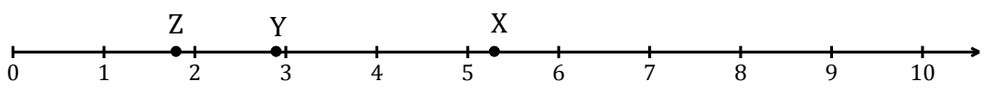
B.



C.



D.



15. Which is equivalent to $\left(-\frac{1}{8}\right)^{-3}$?

A. $(-8)^3$

B. $\left(-\frac{1}{8}\right)^3$

C. $\left(\frac{1}{8}\right)^3$

D. 8^3

16. Which is equivalent to $\left(\frac{2}{3}\right)^4 \left(\frac{2}{3}\right)^{-2}$?

A. $\left(\frac{4}{9}\right)^2$

B. $\left(\frac{2}{3}\right)^2$

C. $\left(\frac{2}{3}\right)^{-8}$

D. $\left(\frac{4}{9}\right)^{-8}$

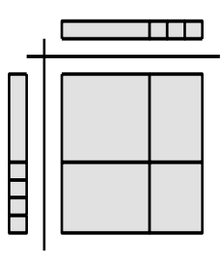
17. Simplify: $(2x^2)^3(3x^{-3})^0$

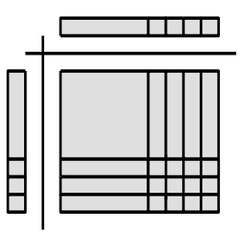
A. $8x^6$
B. $2x^6$
C. $8x^5$
D. $2x^5$

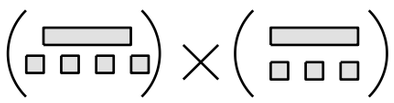
18. What is the GCF of $3x^2y^3 + 12x^3y^2 - 21xy^4$?

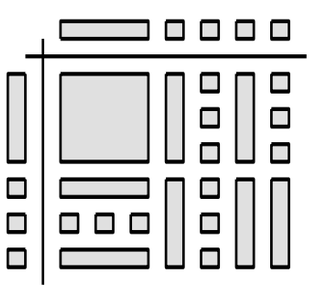
A. 3
B. xy^2
C. $3xy^2$
D. $3x^2y^2$

19. Which algebra tile model best represents the expansion of $(x + 4)(x + 3)$?

A. 

B. 

C. 

D. 

20. Which represents $(x-6)(3x+1)$?

A.

$3x^2$	-18x
x	6

B.

$3x^2$	18x
$-x$	6

C.

$3x^2$	18x
$-x$	-6

D.

$3x^2$	-18x
x	-6

21. Expand and simplify:$(2x-3)(4x+1)$

A. $8x^2+14x+3$
B. $8x^2+10x+3$
C. $8x^2-10x-3$
D. $8x^2-14x-3$

22. Expand and simplify:$(3x^2-2x-4)(x+5)$

A. $3x^3+17x^2+14x+20$
B. $3x^3+13x^2+14x-20$
C. $3x^3+13x^2-14x-20$
D. $3x^3-17x^2-14x-20$

23. Factor: $3x^2+14x-5$

A. $(3x-1)(x-5)$
B. $(3x-1)(x+5)$
C. $(3x+1)(x+5)$
D. $(3x+1)(x-5)$

24. Factor: $49a^2-81b^2$

A. $(7a-9b)(7a-9b)$
B. $(7a-9b)(7a+9b)$
C. $(9b-7a)(9b+7a)$
D. $(9b-7a)(9b-7a)$

25. The number of hours a person works affects the amount of money earned. What is the dependent variable?

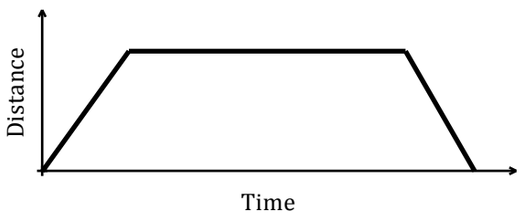
A. The amount of money earned.
B. The amount of work completed.
C. The number of hours work.
D. The number of people working.

26. Which set of ordered pairs represents a function?

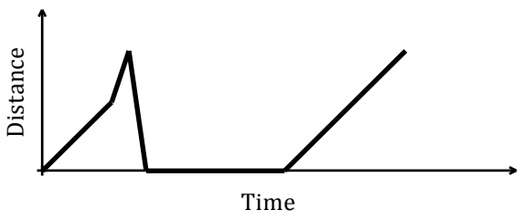
A. (-1, 2), (0, 2), (-1, 3), (2, 4)
B. (-1, 3), (2, 3), (3, 4), (3, 5)
C. (0, 0), (1, 1), (1, 2), (2, 3)
D. (0, 0), (1, 2), (2, 3), (3, 4)

27. Mark is walking to a friend's house.
Part way there it begins to rain and he starts to run.
He stops at his friend's house for a while before returning home.
Which distance-time graph best represents this situation?

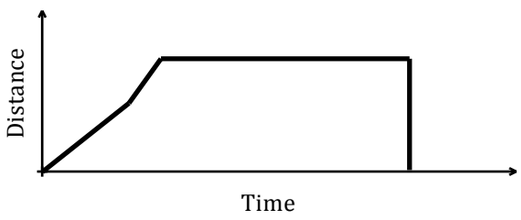
A.



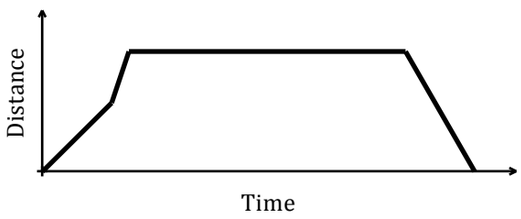
B.



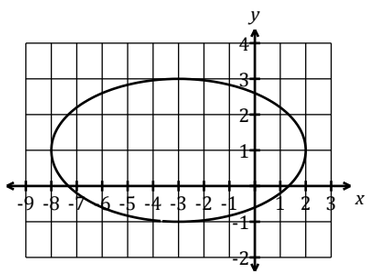
C.



D.



28. What is the range of the graph below?



A. $\{x|-8 \leq x \leq 2, x \in \mathrm{R}\}$
B. $\{x|-1 \leq x \leq 3, x \in \mathrm{R}\}$
C. $\{y|-8 \leq y \leq 2, y \in \mathrm{R}\}$
D. $\{y|-1 \leq y \leq 3, y \in \mathrm{R}\}$

29. If $g(x) = 3x - 2$, what is the value of x when $g(x) = -14$?

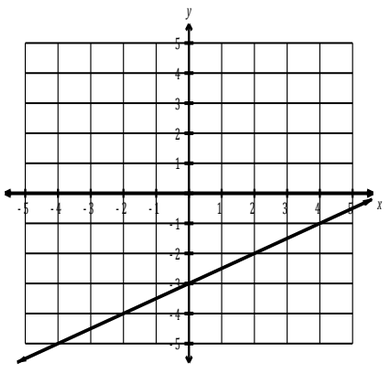
A. $x = -16$
B. $x = -12$
C. $x = -\frac{16}{3}$
D. $x = -4$

30. Which ordered pair represents $f(4) = -7$?

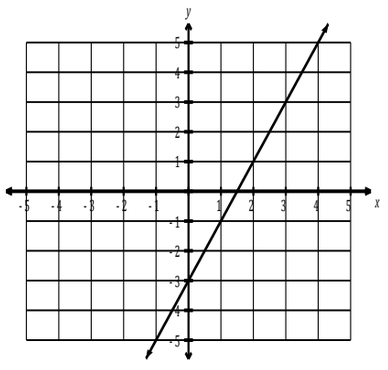
A. $(-7, 4)$
B. $(-4, 7)$
C. $(4, -7)$
D. $(7, -4)$

31. Which graph represents the equation $y = 2x - 3$?

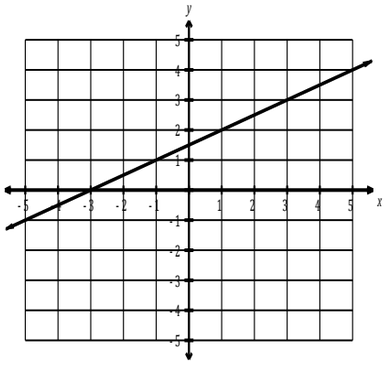
A.



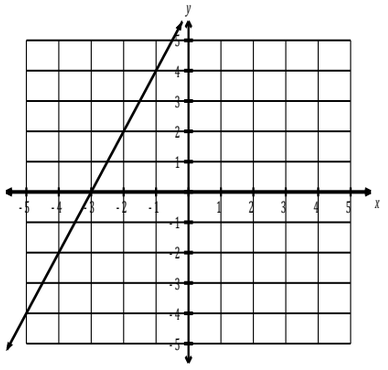
B.



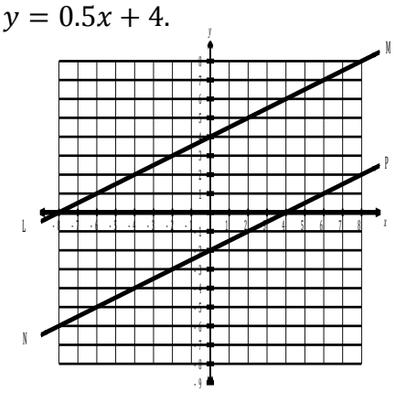
C.



D.



32. In the graph below, LM is represented by the equation $y = 0.5x + 4$.
If NP is parallel to LM, what is the equation of NP?



A. $y = 0.5x - 2$
B. $y = 0.5x + 2$
C. $y = 2x - 2$
D. $y = 2x + 2$

33. A line has slope $\frac{1}{2}$ and passes through point $(6, -2)$.
What is the equation of the line?

A. $-x + y + 8 = 0$
B. $-x + 2y - 4 = 0$
C. $-x + 2y + 10 = 0$
D. $x + 2y + 10 = 0$

34. Which point is on the line $y + 5 = 3(x - 2)$?

A. $(-2, -5)$
B. $(-2, 5)$
C. $(2, -5)$
D. $(2, 5)$

35. What is the value of k such that the line passing through $(4, -5)$ and $(2, k)$ is parallel to the line $y = -4x + 3$?

A. $k = -3$
B. $k = -1$
C. $k = 1$
D. $k = 3$

36. Which linear equation represents the data in the table of values?

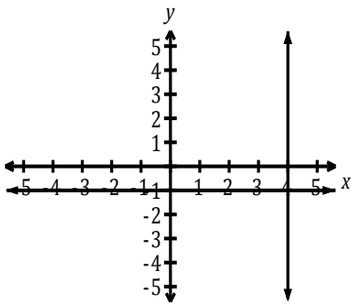
x	y
-5	-20
0	-5
5	10
10	25
15	40

A. $y = -3x - 5$
B. $y = -3x + 5$
C. $y = 3x - 5$
D. $y = 3x + 5$

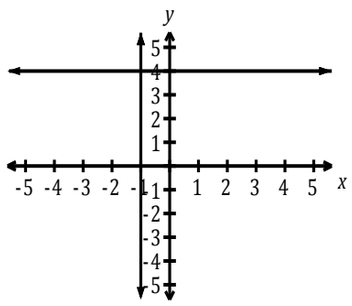
37. Which graph represents the solution to the system below?

$$\begin{cases} x = -4 \\ y = 1 \end{cases}$$

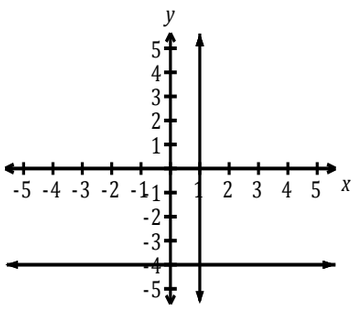
A.



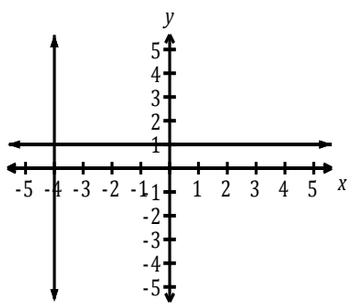
B.



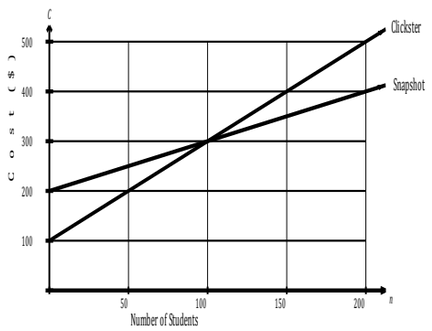
C.



D.



38. The principal compares the cost of two photographers for student IDs.
Which statement is true?



A. *Clickster* is the better value for less than 100 students.
B. *Clickster* is the better value for more than 150 students.
C. *Snapshot* is the better value for less than 100 students.
D. *Snapshot* is the better value for more than 50 students.

39. Linda pays \$165.50 for three concert tickets and one shirt.
Glenn pays \$275.00 for four concert tickets and two shirts.
Which linear system correctly models this situation?

A. $\begin{cases} 3t + 4t = 165.50 \\ s + 2s = 275.00 \end{cases}$

B. $\begin{cases} 3t + 4t = 275.00 \\ s + 2s = 165.50 \end{cases}$

C. $\begin{cases} 3t + s = 165.50 \\ 4t + 2s = 275.00 \end{cases}$

D. $\begin{cases} 3t + s = 275.00 \\ 4t + s = 165.50 \end{cases}$

40. Which system has an infinite number of solutions?

A. $\begin{cases} x + y = 3 \\ 2x + 3y = 4 \end{cases}$

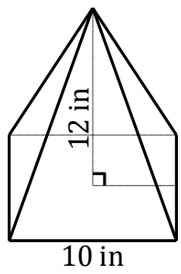
B. $\begin{cases} x + y = 3 \\ 2x + 2y = 6 \end{cases}$

C. $\begin{cases} x + y = 3 \\ 2x + 2y = 8 \end{cases}$

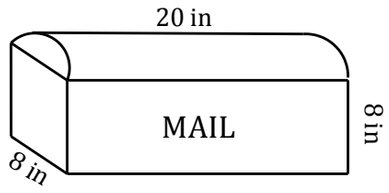
D. $\begin{cases} x + y = 3 \\ 2x + y = 3 \end{cases}$

Constructed Response: Calculator Permitted.
Answers to be written on this paper in the space provided. Show all workings.

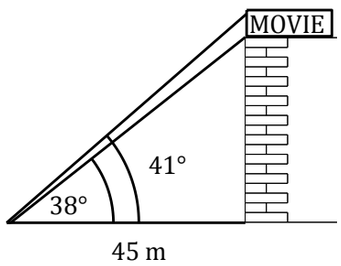
41. What is the surface area of a right square based pyramid with a base length of 10 inches and a height of 12 inches (to the nearest square inch)? [3 points]



42. A mailbox is in the shape of a rectangular prism topped by a half-cylinder, as shown. What is the volume of the mailbox (to the nearest cubic inch)? [3 points]



43. From a point 45 m from the base of a movie theatre, the angle of inclination to the top of the theatre is 38°. The angle of inclination to the top of a billboard on the roof of the theatre is 41°. What is the height of the billboard (to the nearest metre)? [4 points]



44. Express $\sqrt[4]{1620}$ as a mixed radical in simplest form. [3 points]

45. Jennifer did not receive full marks for her solution below. [4 points]
Identify her errors and provide a correct solution.

$$\frac{(p^{-3}\ q^{2})^{-4}}{(2p^{2}q^{-3})^{3}}$$

$$= \frac{p^{12}q^{-8}}{2p^{6}q^{-9}}$$

$$= \frac{p^{12-6}q^{-8-9}}{2}$$

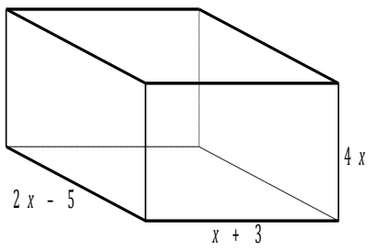
$$= \frac{p^{6}q^{-17}}{2}$$

$$= \frac{p^{6}}{2q^{17}}$$

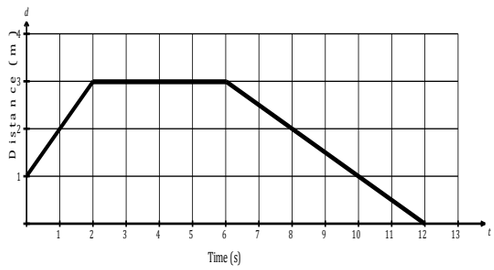
46. Factor completely: [3 points]

$$6x^2 + 27x + 12$$

47. Shane determines the expression for the volume of this right rectangular prism to be $4x^3 + 4x^2 - 60x$. Algebraically determine if Shane is correct. [4 points]



48. A person moves in front of a motion sensor to produce the distance-time graph shown. Accurately describe the movements, including references to speed and direction. [3 points]



49. A boat travelling at 8 m/s begins to accelerate. [3 points]
Its new speed, S, in metres per second, is modelled by the function $S(t) = 8 + 1.5t$, where t is the length of time, in seconds, that it accelerates.

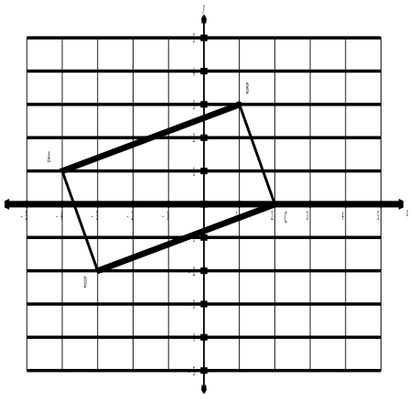
a) Determine the speed of the boat at 7 seconds.

b) Determine the time it takes for the boat to reach 26 m/s.

c) What is the domain of this function?

50. Determine the equation of the line passing through $(8, -1)$ and $(4, 1)$ in general form. [3 points]

51. Is quadrilateral ABCD a parallelogram? Justify your answer. [3 points]



52. Algebraically solve the linear system. [4 points]

$$\begin{cases} 3x + \frac{1}{2}y = 12 \\ -2x + y = 8 \end{cases}$$