

Practice

Exam

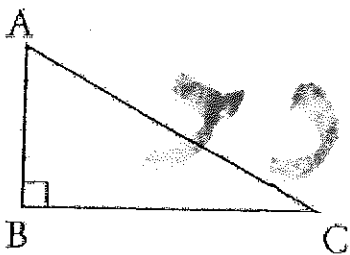
**Part A: Multiple Choice (25 marks)**

Circle the Correct answer for each problem. If more than one answer is circled, it is considered incorrect.

1. The height of a pop can is 15 cm and its shadow is 20 cm long. A carton of milk next to the can is 0.25 m tall. Determine the length of the carton's shadow, to one tenth of a centimetre.

- a. 0.2 cm      b. 18.8 cm      c. 0.3 cm      d. 33.3 cm

2. In  $\triangle ABC$ ,  $AB = 8$  cm and  $BC = 11$  cm. Determine the tangent ratio of  $\angle A$ , to the nearest thousandth.



- a. 0.520      b. 1.375      c. 0.728      d. 1.536

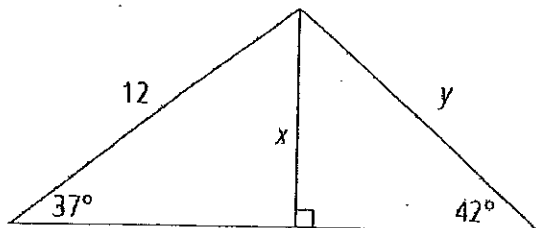
3. Calculate the surface area of a right cylinder with diameter 11.4 cm and height 15.6 cm, to the nearest square centimetre.

- a. 763 cm<sup>2</sup>      b. 1934 cm<sup>2</sup>      c. 2646 cm<sup>2</sup>      d. 941 cm<sup>2</sup>

4. Determine the surface area of a right prism with length 8 cm, width 5 cm, and height 20 mm.

- a. 600 cm<sup>2</sup>      b. 132 cm<sup>2</sup>      c. 480 cm<sup>2</sup>      d. 80 cm<sup>2</sup>

5. Determine the length of  $x$  and the length of  $y$ , to the nearest tenth of a metre.

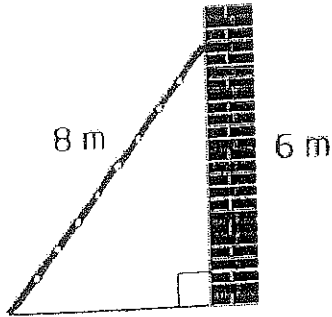


- a.  $x = 7.2$  m and  $y = 9.7$  m      b.  $x = 9.6$  m and  $y = 14.3$  m  
c.  $x = 9.6$  m and  $y = 12.9$  m      d.  $x = 7.2$  m and  $y = 10.8$  m

6. The hypotenuse of a right triangle is 12 cm long. If one of the sides is 4 cm long, which of the following is the most precise measure of the third side?

- a. 128      b. 12.64      c.  $8\sqrt{2}$       d. 11.31

7. A window cleaner places a ladder that is 8 m long against a wall. The top of the ladder is 6 m above the ground. Determine the angle between the base of the ladder and the ground, to the nearest tenth of a degree.

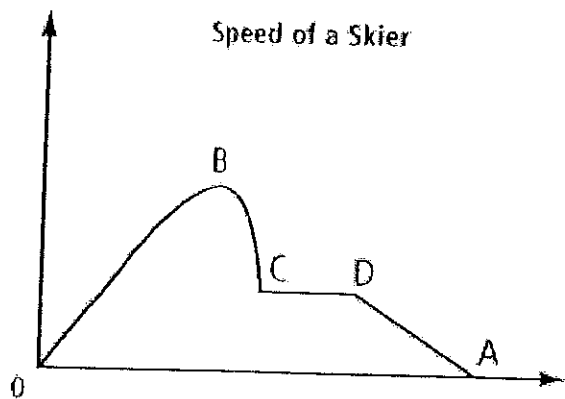


- a. 36.9°      b. 48.6°      c. 41.4°      d. 51.2°

8. Which statement is *incorrect*?

- a. You can solve for the unknown side in *any* triangle, if you know the lengths of the other two sides, by using the Pythagorean theorem.
- b. The hypotenuse is the longest side in a right triangle.
- c. The hypotenuse is always opposite the  $90^\circ$  angle in a right triangle.
- d. The Pythagorean theorem applies to all right triangles.

9. The graph shows how the speed of a skier changes over time as she goes down the slope of a mountain.

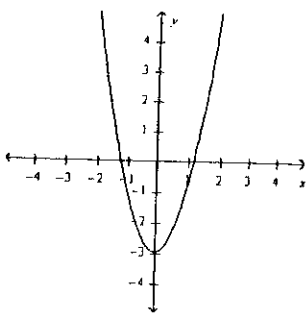


Which statement describes what is happening to the skier as she moves from point D to point A on the graph?

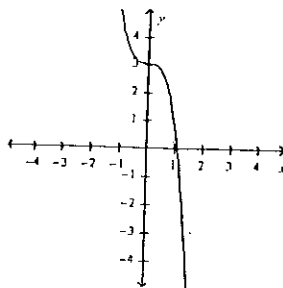
- a. The skier is slowing down and has stopped.
- b. The skier is travelling at a constant speed.
- c. The skier has reached her maximum speed.
- d. The skier is increasing speed at a constant rate.

10. Which graph represents the relation  $y = 2x^2 - 3$ ?

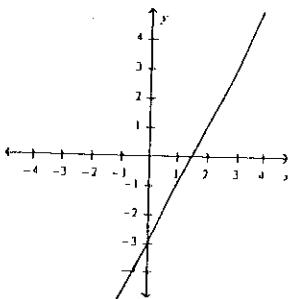
a.



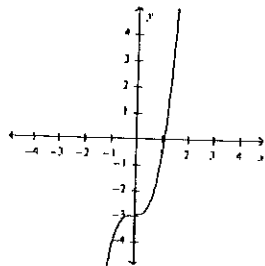
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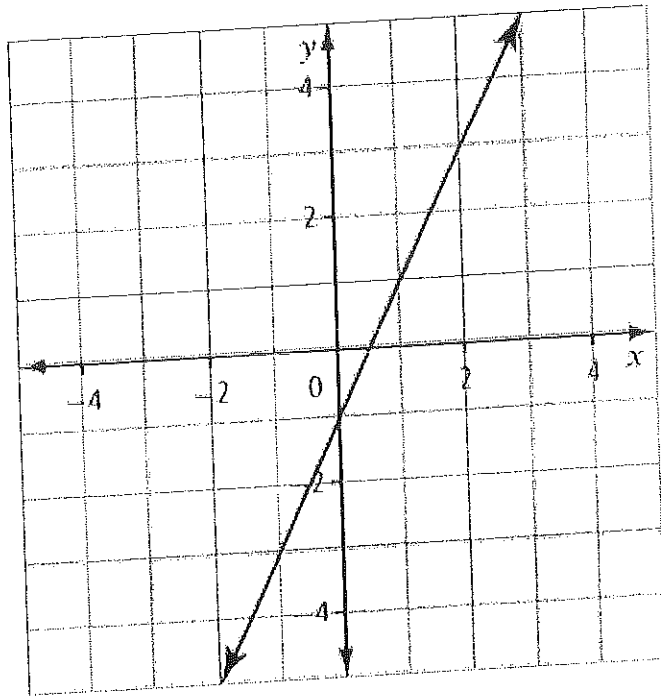
c.



d.



11. What are the slope and y-intercept of this line?



- a. slope:  $-2$ , y-intercept:  $-1$       b. slope:  $2$ , y-intercept:  $-1$   
 c. slope:  $-2$ , y-intercept:  $1$       d. slope:  $2$ , y-intercept:  $1$

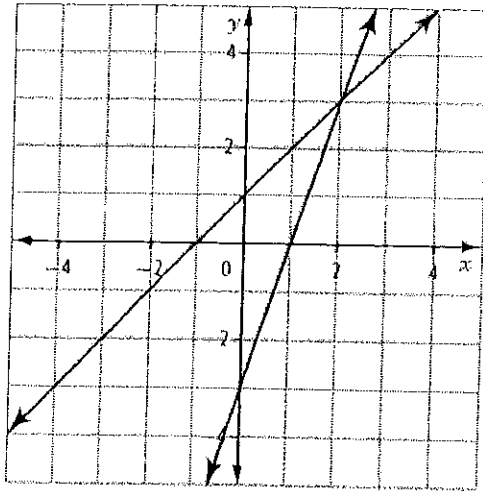
12. For the line  $3x - 4y - 12 = 0$ , which statement is true?

- a. The x-intercept is 3 and the y-intercept is 4.  
 b. The x-intercept is 3 and the y-intercept is  $-4$ .  
 c. The x-intercept is 4 and the y-intercept is 3.  
 d. The x-intercept is 4 and the y-intercept is  $-3$ .

13. Which equation represents a line that is perpendicular to a line passing through points  $G(-3, 8)$  and  $H(0, 5)$ ?

- a.  $y = -2x + 5$       b.  $y = x - 5$       c.  $y = -x + 8$       d.  $y = 2x - 8$

14. What are the coordinates of the point where the lines intersect?



- a. (2, 2)      b. (3, 2)      c. (2, 3)      d. (3, 3)

15. What is the solution (POINT OF INTERSECTION) of the linear system  $4x - y = 5$  and  $-x + y = 1$ ?

- a.  $(-2, -1)$       b.  $\left(\frac{4}{3}, \frac{7}{3}\right)$       c.  $\left(\frac{6}{5}, \frac{11}{5}\right)$       d.  $(2, 3)$

16. The area of a circle is  $64\pi \text{ cm}^2$ . State the radius.

- a. 16 cm      b. 8 cm      c. 14.18 cm      d. 28.36 cm

17. What is the value of  $\frac{4^4}{2^6 - 4}$ ?

- a.  $\frac{64}{7}$       b. -2      c. 4      d.  $\frac{64}{15}$

18. Simplify  $\left(\frac{2}{9}\right)^4 \cdot 9$

- a.  $\frac{16}{729}$       b. 16      c. 144      d.  $\frac{16}{6561}$

19. Which is equivalent to  $\sqrt[4]{160^5}$ ?

a.  $160^{\frac{4}{5}}$

b. 128

c.  $160^{\frac{5}{4}}$

d. 200

20. Which of the following symbols represents an Irrational Number?

a.  $I$

b.  $Q$

c.  $\bar{Q}$

d.  $R$

21. Determine the product of  $(x + 2)(x - 6)$

a.  $x^2 - 12x - 12$

b.  $x^2 - 4x - 12$

c.  $x^2 + 2x - 12$

d.  $x^2 - 12x - 4$

22. An area of a rectangle is  $100x^2 - 49$ . Which of the following best represents the length and the width?

a.  $10x + 7$  and  $10x - 7$

b.  $10x - 7$  and  $10x - 7$

c.  $10x + 7$  and  $10x + 7$

d. 10 and  $10x^2 - 49$

23. Which is equivalent to  $81m^2 + 72m + 16$ ?

a.  $(9m - 4)^2$

b.  $(9m - 256)^2$

c.  $(9m + 4m)^2$

d.  $(9m + 4)^2$

24. What is the factored form of  $6x^2 + 17x + 5$ ?

a.  $(6x + 1)(x + 5)$

b.  $(3x + 1)(2x + 5)$

c.  $(3x + 5)(2x + 1)$

d.  $(6x + 5)(x + 1)$

25. Given the lines  $3x + 6y = 12$  and  $6x + 12y = 20$ , how many points of intersections are there?

a. 1

b. 2

c. none

d. infinitely many

**Part B: Short Answer (15 marks)**

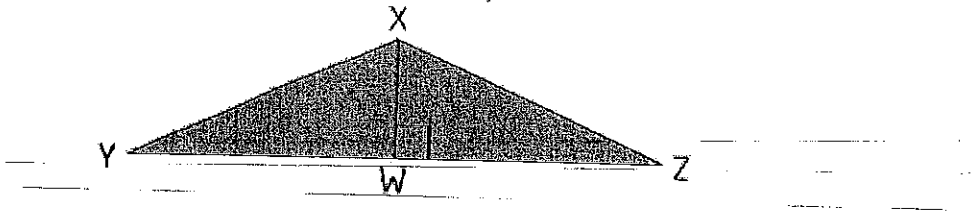
**Be sure to show work in order to gain partial marks for incorrect solutions.**

1. Determine the volume of each object, to the nearest tenth of a cubic unit.

a) A right cone with radius 2.2 cm and height 6.4 cm (1 mark)

b) A sphere with radius 5.8 ft (1 mark)

2. In  $\triangle XYZ$ ,  $XY$  and  $XZ$  have equal lengths of 6 cm.  $YZ$  is 10 cm. Determine the measure of  $\angle YXZ$ , to the nearest degree. (1 mark)



3. Express each entire radical as a mixed radical in simplest form.

a)  $\sqrt{45}$  (1 mark)

b)  $\sqrt[3]{40}$  (1 mark)

c)  $\sqrt{243}$  (1 mark)



4. Determine the greatest common factor of the numbers 12, 54, and 72. (1 mark)

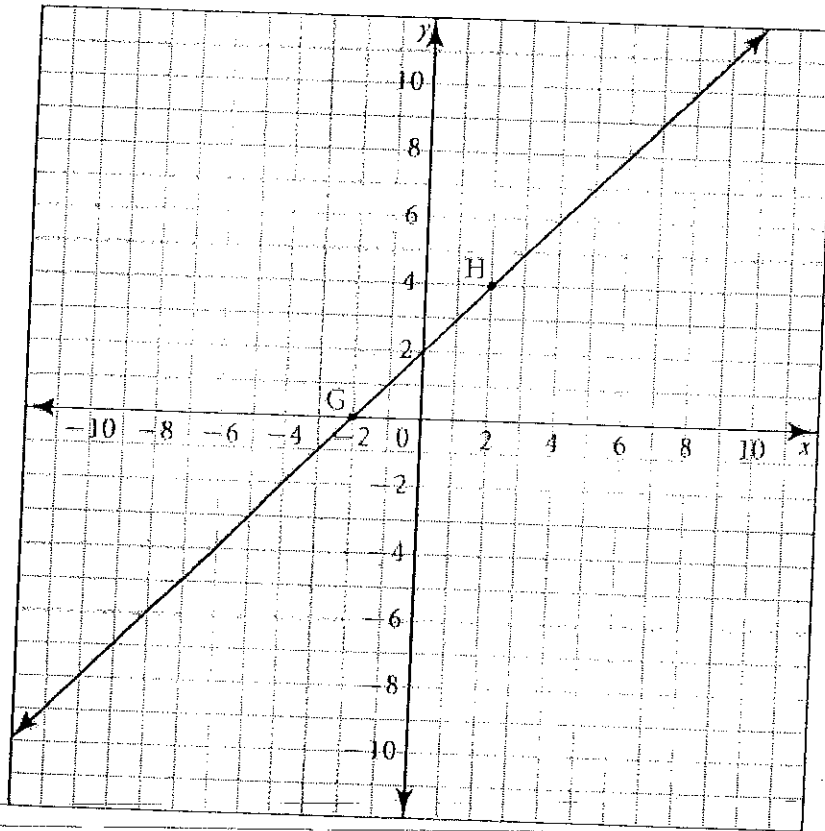
5. 20 feet is equivalent to how many inches? (1 mark)

6. 44 yards is equivalent to how many feet? (1 mark)

7. Find the value of  $x$ :  $3(x - 2) = 2(x - 4)$  (1 mark)

8. Show that the point (2,3) lies on the line  $5x + 3y = 19$ . (1 mark)

9. Use the graph to answer parts a) to d). (4 marks)



a) Identify the coordinates of points G and H.

b) Identify the rise of the line through points G and H.

c) Identify the run of the line through points G and H.

d) Identify the slope of the line through points G and H.

Part C: Long Answer Section. Show all work to gain full marks. Read each question carefully for additional instructions. (44 marks)

1. Given that a rectangular room has a width of 9 yards and length of 12 yards. Cindy wants to lay some flooring that will cost \$1.95 per square foot.

a) Find the area of the room that will needed to be floored. (1 mark)

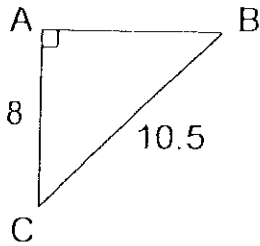
b) How much will it cost to lay the floor after GST and PST? (GST = 5% and PST = 7%) (1 mark)

2. Determine the total length in cm: (1 mark)

$$500 \text{ mm} + 2 \text{ m} + 300 \text{ cm}$$

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3. Solve the given triangle. All angles and sides should be rounded to 1 decimal place. Place your answer in the space provided. (2 marks)



Angle B =

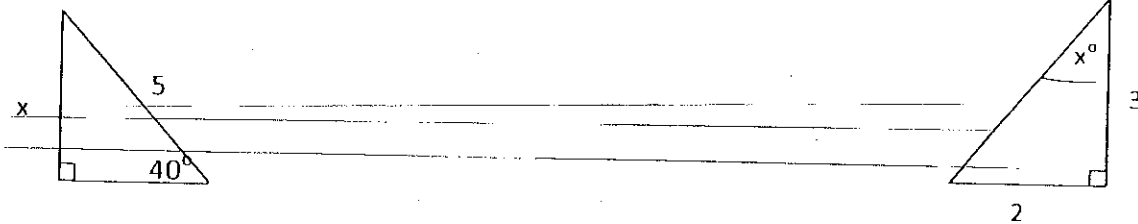
Angle C =

Side c =

4. Find the value of "x" to 1 decimal place:

a) (1 mark)

b) (1 mark)



5. Ryan ran 5 km east. He then turned north and walked 2.4 km to rest so he can run straight home. If he takes the most direct route (straight line) and runs 6 km per hour, how long will it take him to run home? Round to 2 decimals. (2 marks)

6. Simplify each:

a)  $\sqrt[3]{32x^{10}y^{20}z^4}$

(1.5 marks)

b)  $\frac{(6x^4y^7)^2}{2x^3y^4}$

(1.5 marks)

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c)  $(x+1)^2 - 4(x-2)^2 - (3x+5)$

(3 marks)

d)  $\sqrt{4x^2} \cdot \sqrt[3]{8x^3}$

(2 marks)

7. Factor each completely:

a)  $4x^2 - 16$

(2 marks)

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b)  $x^2 + 7x + 12$

(1 mark)

c)  $10x^2 + 13x + 4$

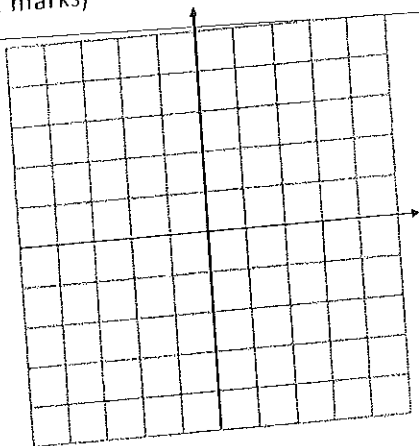
(2 marks)

d)  $x^3 - 2x^2 - 35x$

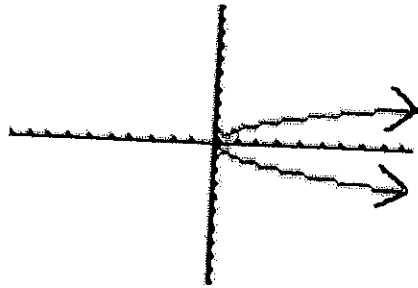
(2 marks)

8. Graph the line  $5x + 2y - 10 = 0$  using either intercept method or slope-intercept method.

(2 marks)



9. Given the following graph, answer the questions that follow:

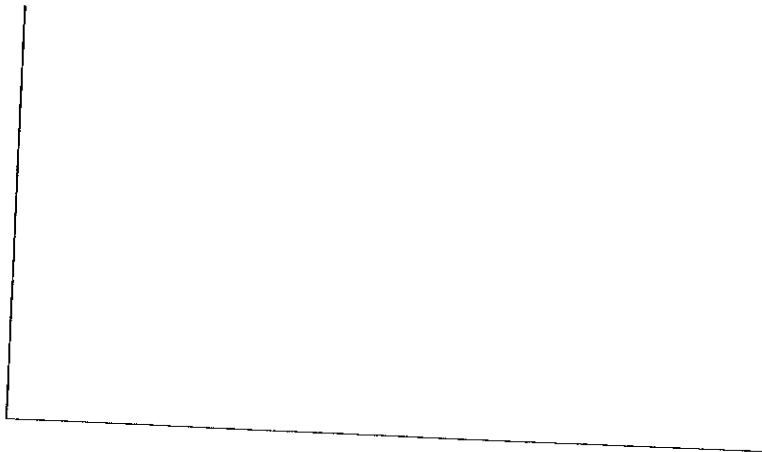


a) State the domain and range in a notation of your choice (2 marks)

b) State whether the graph is a function or not. Justify your answer. (1 mark)

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10. A Ferris Wheel at the North Battleford Ex takes 1 minute to make one revolution and 30 seconds to do half a revolution. The lowest the wheel will go is 1 metre off the ground when a person gets on the ride at time = 0, and reaches a maximum height of 11 metres off the ground. Sketch the ride for 3 minutes beginning at time = 0. (2 marks)





11. A sphere has a volume of  $972\pi \text{ cm}^3$ . Complete the following:

a) Find the diameter of the sphere. (2 marks)

b) A cone has the same diameter and same volume as part a. Find the height of the cone to 2 decimals.  
(2 marks)

12. Given the following lines, find the solution (Point of Intersection) using elimination or substitution:  
(3 marks)

$$3x + 2y = 9$$

$$2x - 3y = -7$$

13. Find the equation of the line passing through (5,4) and perpendicular to  $y = -10x + 12$  in general form. (3 marks)

14. Given that line 1 has a slope of  $\frac{3k + 5}{2}$  and is parallel to line 2 which has a slope of  $5k + 3$ . Find the value of the slope. (3 marks) —