

1. Simplify: $2(4x+3) - 2(2x-4)$

- A) $4x-2$ B) $12x+14$ C) $4x-6$ D) $4x+14$

2. Evaluate: 2^{-3}

- A) $-\frac{1}{8}$ B) -6 C) -8 D) $\frac{1}{8}$

3. Solve: $10 - 2x = 9$

- A) 2 B) -2 C) $\frac{1}{2}$ D) 1

4. A community college has 2,000 students and 50 instructors. Next year the enrollment will be 6,000. How many new instructors should be hired if the college wants to keep the same student to instructor ratio?

- A) 50 B) 150 C) 300 D) 100

5. Find the slope of the line passing through the points $(-3, 8)$ and $(5, -10)$.

- A) $-\frac{9}{4}$ B) $-\frac{4}{9}$ C) $\frac{9}{4}$ D) $\frac{4}{9}$

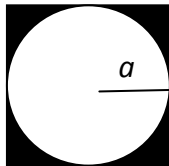
6. Find the mode of 12, 13, 9, 14, 11, 13:

- A) 12 B) 9 C) 12.5 D) 13

7. A rectangular prism has a length of 10 cm and width of 5 cm. If the volume of the prism is 250 cm^3 , find the height. (Volume of a rectangular prism is $V = LWH$)

- A) 10 cm B) 5 cm C) 20 cm D) 1 cm

8. Find the area of the shaded portion of the figure below if $a = 10 \text{ m}$. Use $\pi = 3$.



- A) 400 m^2 B) 300 m^2 C) 200 m^2 D) 100 m^2

9. Solve for x: $-(x-4) = -2x+1$

- A) -3 B) 5 C) 3 D) -5

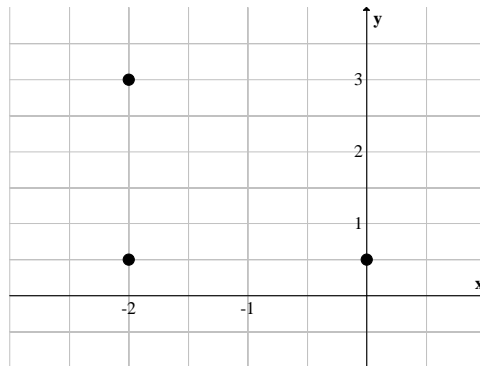
10. Simplify using positive exponents: $(-2x)^{-4}$

- A) $-\frac{16}{x^4}$ B) $\frac{16}{x^4}$ C) $\frac{-1}{8x^2}$ D) $\frac{1}{16x^4}$

11. A survey is taken to determine the number of Seneca college students that use the recreation facilities. Which of the following would be a representative sample?

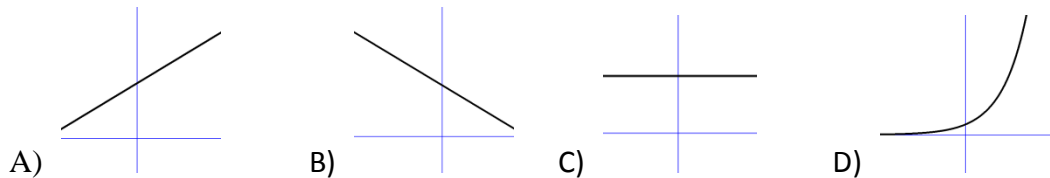
- A. only students in first year
- B. every second student in a first semester class
- C. a random selection of students in a the fitness club
- D. 100 males and 100 females selected randomly from a college student list

12. Find the ordered pair that would complete the rectangle in the graph below.



- A) (3,0) B) (0,3) C) (-3,0) D) (0,-3)

13. Which of the following graphs represents a decreasing relationship?



14. Add $5x + 4$ and $-18x - 10$.

- A) $23x + 6$ B) $23x + 14$ C) $-13x - 6$ D) $-13x - 14$

15. Find the greatest common factor of $9x^2y$, $6xy^3$ and $3x^2y^2$

- A) $3xy$ B) $6x^2y^2$ C) $24x^8y^6$ D) $18x^3y^3$

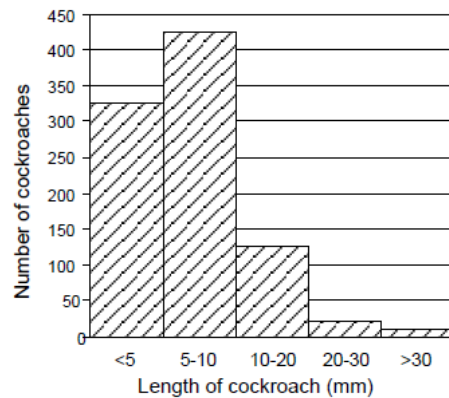
16. Solve: $\frac{2m-5n}{n+3p}$ if $m = -3$, $n = 2$, and $p = -1$

- A) 16 B) -24 C) -16 D) 24

17. Multiply: $(x + 3)(x + 2)$

- A) $x^2 + 6x + 5$ B) $x^2 + 6$ C) $x^2 + 5x + 6$ D) $x + 2$

The following histogram represents the lengths of the cockroaches inside a person's house. Use the graph below to answer the following questions (#18, 19 and 20).



18. The majority of cockroaches in a person's house have a length

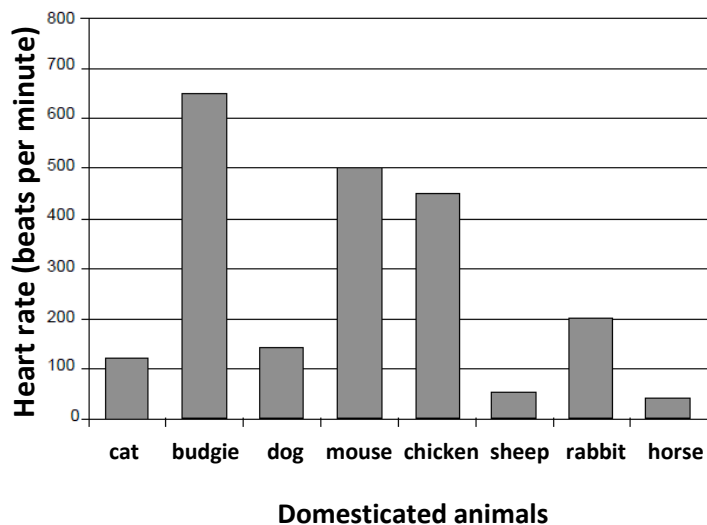
- A) less than 5 mm B) 5 – 10 mm
C) 10 – 20 mm D) 20 mm or more

19. There are less than 50 cockroaches with a length

- A) less than 5 mm B) 5 – 10 mm
C) 10 – 20 mm D) 20 mm or more

20. The number of cockroaches in a person's house that have a length from 10 to 20 mm is approximately
- A) 25 B) 125 C) 425 D) 325
21. Which of the following represents "5 times the sum of $a + b$ "?
- A) $5 + (a + b)$ B) $5a + b$ C) $5(a + b)$ D) $5 + (ab)$
22. Which of the ordered pairs is a solution for the equation $3x - 2y = 8$?
- A) $(4, -2)$ B) $(0, -4)$ C) $(-2, 4)$ D) $(0, 4)$
23. A person drives 500 km in 6 months. How many km will that person drive in 3 years?
- A) 3 000 km B) 2 500 km C) 1 000 km D) 300 km
24. Evaluate $t^2 - st + 2$ if $t = -1$ and $s = 2$
- A) -1 B) 4 C) 5 D) 1

The following bar graph represents the heart rate of several domesticated animals. Answer the following questions (#25, 26 and 27) using the graph below.



25. Which animal had the highest heart rate of all the domesticated animals?
- A) budgie B) sheep C) mouse D) chicken
26. Which animal has the lowest heart rate of all the domesticated animals?
- A) cat B) dog C) horse D) rabbit

27. What is the approximate heart rate of a chicken?

- A) 400 beats per minute
- B) 450 beats per minute
- C) 500 beats per minute
- D) 550 beats per minute

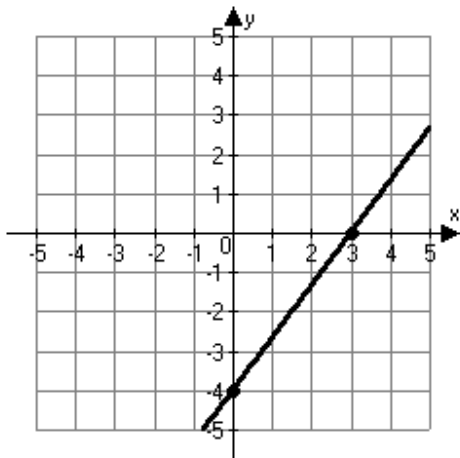
28. The formula ${}^{\circ}F = \frac{9}{5}({}^{\circ}C) + 32$ converts temperatures in degrees Celsius to degrees Fahrenheit. Find the Fahrenheit equivalent of $15^{\circ}C$.

- A) $41^{\circ}F$
- B) $72^{\circ}F$
- C) $59^{\circ}F$
- D) $62^{\circ}F$

29. The sides of a triangle can be represented by $x+3$, $2x+4$, and $3x-1$. What is the perimeter?

- A) $(x+3)(2x+4)(3x-1)$
- B) $6x^3 - 12$
- C) $6x+6$
- D) $6x+8$

30. What is the slope of the line in the graph below?



- A) $\frac{3}{4}$
- B) $\frac{-4}{3}$
- C) $\frac{-3}{4}$
- D) $\frac{4}{3}$