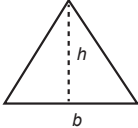
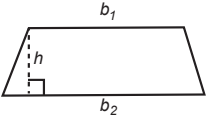
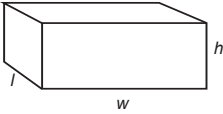
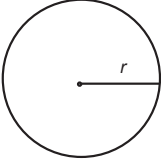
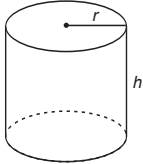
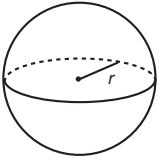
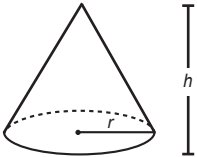
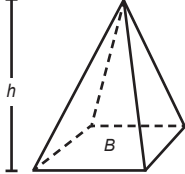


# Formulas for K12 Placement Test

Euler's Formula: $F + V - E = 2$	
Area of triangle = $\frac{1}{2}bh$	
Area of trapezoid = $\frac{1}{2}(b_1 + b_2)h$	
Volume of prism = $Bh$	
Area of circle = $\pi r^2$ Circumference = $2\pi r$	
Lateral area of cylinder = $2\pi rh$ Surface area of cylinder = $2\pi rh + 2\pi r^2$	
Surface area of sphere = $4\pi r^2$ Volume of sphere = $\frac{4}{3}\pi r^3$	
Volume of cone = $\frac{1}{3}\pi r^2 h$	
Volume of pyramid = $\frac{1}{3}Bh$	
$\pi \approx 3.14$	When you use $\pi \approx 3.14$ , give your answers to only three digits (for example, 187,000 for 187,220 or 2.96 for 2.9613).



Name \_\_\_\_\_

Date \_\_\_\_\_

Circle the letter next to the correct answer.

1. Christa must answer 5 of 10 questions on the quiz. How many combinations of questions are possible, assuming order doesn't matter?

- A. 2
- B. 15
- C. 50
- D. 252

2. The probability of rain tomorrow is 80%. The probability of snow is 40%. The probability of rain and snow is 30%. What is the probability that it will rain or snow?

- A. 70%
- B. 90%
- C. 40%
- D. 50%

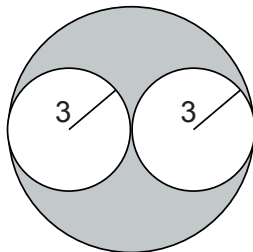
3. The probability that the Hawks football team will win the next game is 0.6. What are the odds in favor of the Hawks team winning?

- A. 6 to 1
- B. 3 to 2
- C. 3 to 1
- D. 6 to 10

4. A box contains 4 black checkers and 8 red checkers. A checker is drawn and replaced. Then a second checker is drawn. What is the probability of both checkers being red?

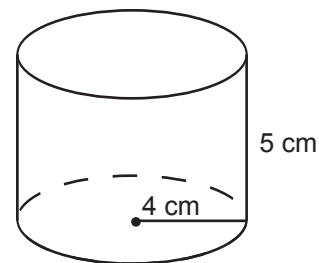
- A.  $\frac{1}{2}$
- B.  $\frac{4}{9}$
- C.  $\frac{1}{12}$
- D.  $\frac{1}{8}$

5. Find the area of the shaded region. Leave your answer in terms of pi.



- A.  $6\pi$  sq units
- B.  $9\pi$  sq units
- C.  $18\pi$  sq units
- D.  $54\pi$  sq units

6. Find the volume. Use  $\pi \approx 3.14$ .

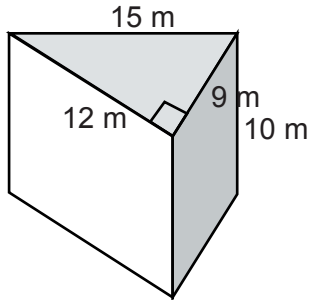


- A.  $16.2\text{ cm}^3$
- B.  $63.0\text{ cm}^3$
- C.  $126\text{ cm}^3$
- D.  $251\text{ cm}^3$



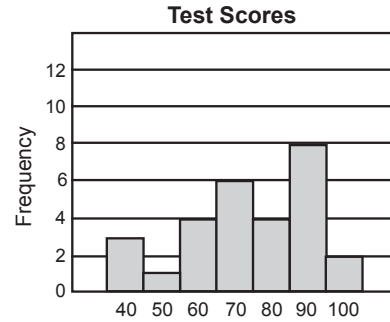
Circle the letter next to the correct answer.

7. Find the lateral area. Use  $\pi \approx 3.14$ .



- A.  $468 \text{ m}^2$
- B.  $360 \text{ m}^2$
- C.  $37 \text{ m}^2$
- D.  $36 \text{ m}^2$

8. Find the first and third quartiles of the data represented by the histogram. Assume all scores are multiples of 10.



- A. 1st quartile = 40; 3rd quartile = 70
- B. 1st quartile = 90; 3rd quartile = 170
- C. 1st quartile = 60; 3rd quartile = 90
- D. 1st quartile = 50; 3rd quartile = 80

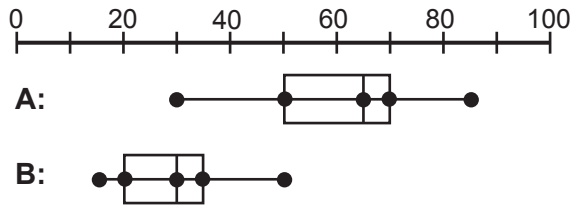
9. What is the median of the data in the stem-and-leaf plot below?

4	7
5	4, 8
6	1, 5, 6, 9
7	0, 2, 3, 5, 5, 6
8	2, 7

- A. 72
- B. 70
- C. 69
- D. 66

Circle the letter next to the correct answer.

10. What is the range of data in set A?



- A. 35
- B. 45
- C. 55
- D. 75

11. The area of a parallelogram is  $120 \text{ cm}^2$ . The base is 16 cm. What is the height?

- A. 6.5 cm
- B. 7.5 cm
- C. 13 cm
- D. 16 cm

12. What are the slope and  $y$ -intercept of the graph of the following equation?

$$2y + x = 4$$

- A. slope:  $-2$ ,  $y$ -intercept: 4
- B. slope: 2,  $y$ -intercept: 4
- C. slope:  $-\frac{1}{2}$ ,  $y$ -intercept: 2
- D. slope:  $\frac{1}{2}$ ,  $y$ -intercept: 2

13. What is the point of intersection of the graphs of the two lines below?

$$y - x = 4$$

$$3y + x = 8$$

- A.  $(-3, 1)$
- B.  $(3, 1)$
- C.  $(1, -3)$
- D.  $(-1, 3)$



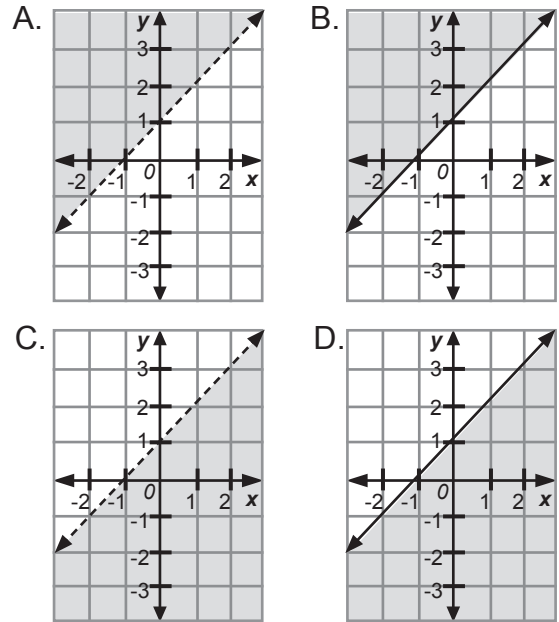
Circle the letter next to the correct answer.

14. Choose the solution of the equation, if  $x = 3$ .

$$6x - 3y = 9$$

- A.  $y = 9$
- B.  $y = 3$
- C.  $y = 0$
- D.  $y = -3$

15. Which is the graph of the inequality  $y > x + 1$ ?



16. Choose the equation that relates the total cost ( $y$ ) to the amount of beef ( $x$ ) ordered and delivered.

A butcher charges \$4.50 per pound for the best cut of beef. For an additional \$2.00, any order will be delivered.

- A.  $4.5x + y = 2$
- B.  $2 + 4.5y = x$
- C.  $y = 4.5x + 2$
- D.  $x = 2y + 4.5$

17. How many pounds of beef can be ordered and delivered for \$33.50?

A butcher charges \$4.50 per pound for the best cut of beef. For an additional \$2.00, any order will be delivered.

- A. 5.5 lb
- B. 6 lb
- C. 7 lb
- D. 7.5 lb



Circle the letter next to the correct answer.

18. Which is the equation of the boundary line for the graph of the inequality below?

$$3x + y > -6$$

- A.  $y = -3x - 6$
- B.  $y = 3x - 6$
- C.  $3y = -x + 6$
- D.  $6y = 3x - 6$

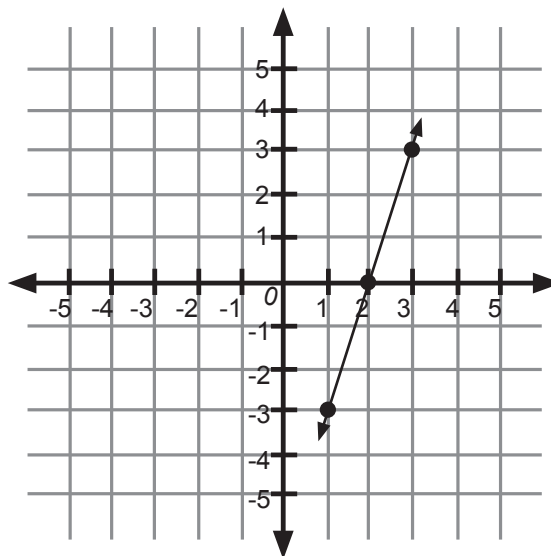
19. Choose the ordered pair that solves the following equation.

$$-x + 3y = 15$$

- A.  $(-1, 5)$
- B.  $(6, 7)$
- C.  $(0, 3)$
- D.  $(6, -7)$

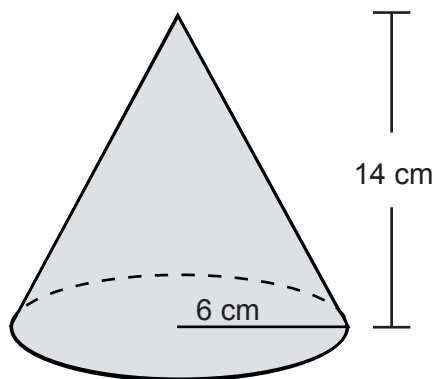
20. What is the equation of the graph below?

- A.  $3x - y = 6$
- B.  $3x + y = 6$
- C.  $x + 3y = 6$
- D.  $x - 3y = 6$



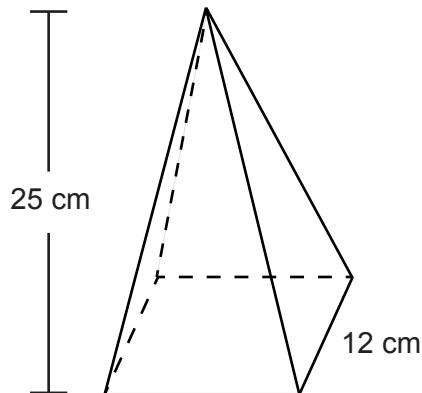
Circle the letter next to the correct answer.

21. Find the volume. Use  $\pi \approx 3.14$ .



- A.  $88 \text{ cm}^3$
- B.  $528 \text{ cm}^3$
- C.  $236.8 \text{ cm}^3$
- D.  $1582.6 \text{ cm}^3$

22. Find the volume of the square pyramid.



- A.  $3600 \text{ cm}^3$
- B.  $300 \text{ cm}^3$
- C.  $2400 \text{ cm}^3$
- D.  $1200 \text{ cm}^3$

23. What is the surface area of a sphere with a diameter of 12 m? Leave your answer in terms of  $\pi$ .

- A.  $48 \pi \text{ m}^3$
- B.  $144 \pi \text{ m}^2$
- C.  $288 \pi \text{ m}^3$
- D.  $576 \pi \text{ m}^2$

24. Evaluate.

$$\sqrt{64}$$

- A. 4
- B. 8
- C. 16
- D. 32

Circle the letter next to the correct answer.

25. Approximate to the nearest tenth.

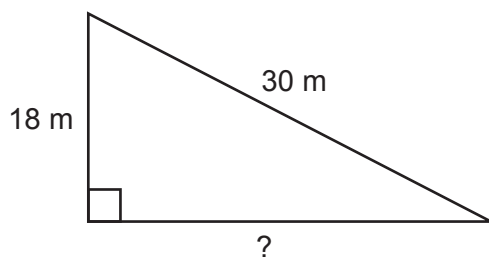
$$\sqrt{91}$$

- A. 9.5
- B. 9
- C. 8.5
- D. 8

26. What is the length of the hypotenuse of a right triangle if one leg is 9 feet long and the other leg is 6 feet long? Round to the nearest hundredth of a foot if necessary.

- A. 10.82 ft
- B. 15 ft
- C. 54 ft
- D. 54.28 ft

27. Find the missing length.



- A. 48 m
- B. 12 m
- C. 24 m
- D. 36 m

28. Find the mean for the following set of data.

122, 108, 93, 112, 93, 120

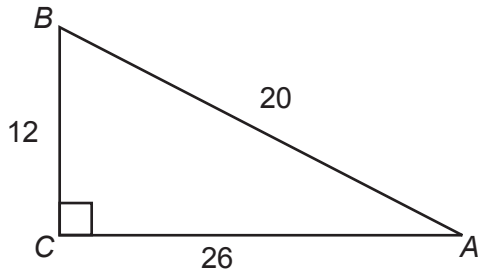
- A. 108
- B. 109
- C. 110
- D. 112





Circle the letter next to the correct answer.

29. Give the value for the sine of  $\angle A$  in lowest terms.



- A.  $\frac{10}{13}$
- B.  $\frac{3}{5}$
- C.  $\frac{1}{2}$
- D.  $\frac{5}{8}$

30. Use the frequency distribution table below to compute the mean of the data.

$x$	$f$
5	2
10	3
15	4
20	2
30	1

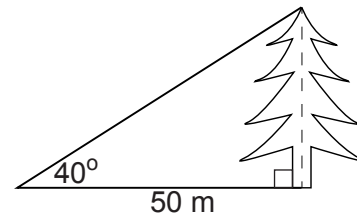
- A. 16
- B. 14.2
- C. 4
- D. 13.3

31. In the table below,  $X$  represents the possible values of a random variable and  $P(X)$  represents their probabilities of occurrence. Find the expected value of  $X$ .

$X$	2	5	10
$P(X)$	0.3	0.5	0.2

- A. 0.4
- B. 1.6
- C. 5.1
- D. 8.3

32. How tall is the tree in the diagram below? Give measure to the nearest tenth.



Use the following values for an angle with measure  $40^\circ$ :

$$\begin{aligned} \sin 40^\circ &\approx 0.6428 \\ \cos 40^\circ &\approx 0.7660 \\ \tan 40^\circ &\approx 0.8391 \end{aligned}$$

- A. 32.1 m
- B. 38.3 m
- C. 42.0 m
- D. 2000 m

Circle the letter next to the correct answer.

33. Divide the polynomial by the given monomial.

$$3b^5 + 8b^4 - 11b^3; b^3$$

- A.  $3b^2 + 8b - 11$
- B.  $3b^3 + 8b^2 - 11b^0$
- C.  $3b^2 + 8b - 11b^1$
- D.  $3b^3 + 8b - 11b$

34. Multiply the first polynomial by the second.

$$y^2 + 10y - 7; 3y + 4$$

- A.  $4y^2 + 40y - 28$
- B.  $3y^3 + 30y^2 + 21y - 28$
- C.  $y^3 + 28y^2 - 21y$
- D.  $3y^3 + 34y^2 + 19y - 28$

35. Subtract the second polynomial from the first.

$$-b^2 + 4b - b^3 - 4; b^4 + 3b^2 - b + 5$$

- A.  $-b^6 - 3b - b^2 - 1$
- B.  $-b^4 - b^3 - 4b^2 + 5b - 9$
- C.  $2b^2 + 3b - b^3 + 1$
- D.  $b^4 + b^3 - 3b^2 - b + 9$

36. Evaluate the polynomial for the given value of the variable.

$$4w^4 + w^3 - 3w^2; w = 3$$

- A. 6
- B. 39
- C. 244
- D. 324



Circle the letter next to the correct answer.

37. In how many different ways can you arrange 5 books side by side on a bookshelf?

- A. 10
- B. 25
- C. 60
- D. 120

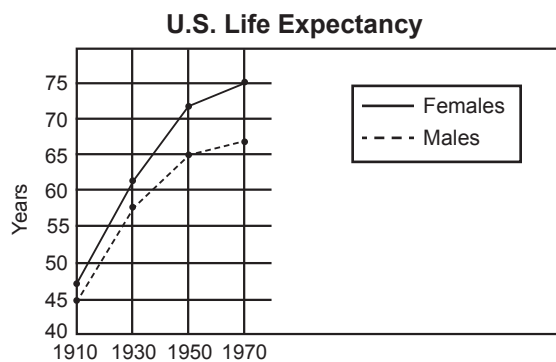
38. Simplify.

$$7n^2 \cdot 5n^9$$

- A.  $35n^{18}$
- B.  $35n^{11}$
- C.  $35n^9$
- D.  $35n^7$

39. Use the graph below to answer the question.

How much did the life expectancy of a female increase from 1930 to 1970?



- A. 13 years
- B. 15 years
- C. 62 years
- D. 75 years

40. Divide the first polynomial by the second.

$$3x^3 + 2x^2 - 7x + 2; x + 2$$

- A.  $3x^2 + 2x - 5$
- B.  $3 - x^2 - 1$
- C.  $x^3 + 3x^2 - 7x$
- D.  $3x^2 - 4x + 1$



Name \_\_\_\_\_

Date \_\_\_\_\_

Circle the letter next to the correct answer.

1. Christa must answer 5 of 10 questions on the quiz. How many combinations of questions are possible, assuming order doesn't matter?

- A. 2
- B. 15
- C. 50
- D. 252

2. The probability of rain tomorrow is 80%. The probability of snow is 40%. The probability of rain and snow is 30%. What is the probability that it will rain or snow?

- A. 70%
- B. 90%
- C. 40%
- D. 50%

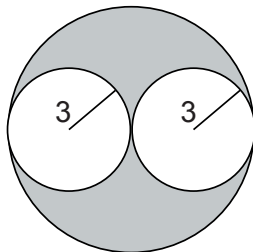
3. The probability that the Hawks football team will win the next game is 0.6. What are the odds in favor of the Hawks team winning?

- A. 6 to 1
- B. 3 to 2
- C. 3 to 1
- D. 6 to 10

4. A box contains 4 black checkers and 8 red checkers. A checker is drawn and replaced. Then a second checker is drawn. What is the probability of both checkers being red?

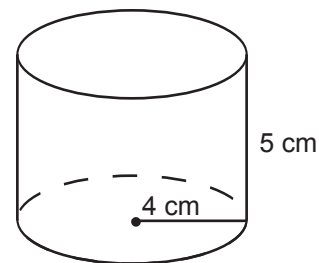
- A.  $\frac{1}{2}$
- B.  $\frac{4}{9}$
- C.  $\frac{1}{12}$
- D.  $\frac{1}{8}$

5. Find the area of the shaded region. Leave your answer in terms of pi.



- A.  $6\pi$  sq units
- B.  $9\pi$  sq units
- C.  $18\pi$  sq units
- D.  $54\pi$  sq units

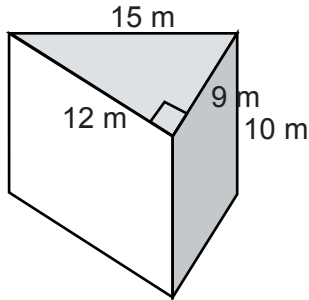
6. Find the volume. Use  $\pi \approx 3.14$ .



- A.  $16.2\text{ cm}^3$
- B.  $63.0\text{ cm}^3$
- C.  $126\text{ cm}^3$
- D.  $251\text{ cm}^3$

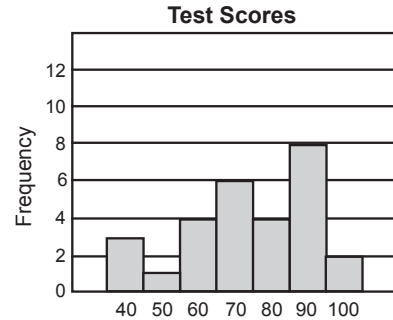
Circle the letter next to the correct answer.

7. Find the lateral area. Use  $\pi \approx 3.14$ .



- A.  $468 \text{ m}^2$
- B.  $360 \text{ m}^2$
- C.  $37 \text{ m}^2$
- D.  $36 \text{ m}^2$

8. Find the first and third quartiles of the data represented by the histogram. Assume all scores are multiples of 10.



- A. 1st quartile = 40; 3rd quartile = 70
- B. 1st quartile = 90; 3rd quartile = 170
- C. 1st quartile = 60; 3rd quartile = 90
- D. 1st quartile = 50; 3rd quartile = 80

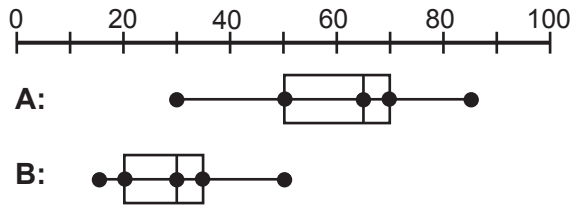
9. What is the median of the data in the stem-and-leaf plot below?

4	7
5	4, 8
6	1, 5, 6, 9
7	0, 2, 3, 5, 5, 6
8	2, 7

- A. 72
- B. 70
- C. 69
- D. 66

Circle the letter next to the correct answer.

10. What is the range of data in set A?



- A. 35
- B. 45
- C. 55
- D. 75

11. The area of a parallelogram is  $120 \text{ cm}^2$ . The base is 16 cm. What is the height?

- A. 6.5 cm
- B. 7.5 cm
- C. 13 cm
- D. 16 cm

12. What are the slope and y-intercept of the graph of the following equation?

$$2y + x = 4$$

- A. slope:  $-2$ , y-intercept: 4
- B. slope: 2, y-intercept: 4
- C. slope:  $-\frac{1}{2}$ , y-intercept: 2
- D. slope:  $\frac{1}{2}$ , y-intercept: 2

13. What is the point of intersection of the graphs of the two lines below?

$$y - x = 4$$

$$3y + x = 8$$

- A.  $(-3, 1)$
- B.  $(3, 1)$
- C.  $(1, -3)$
- D.  $(-1, 3)$

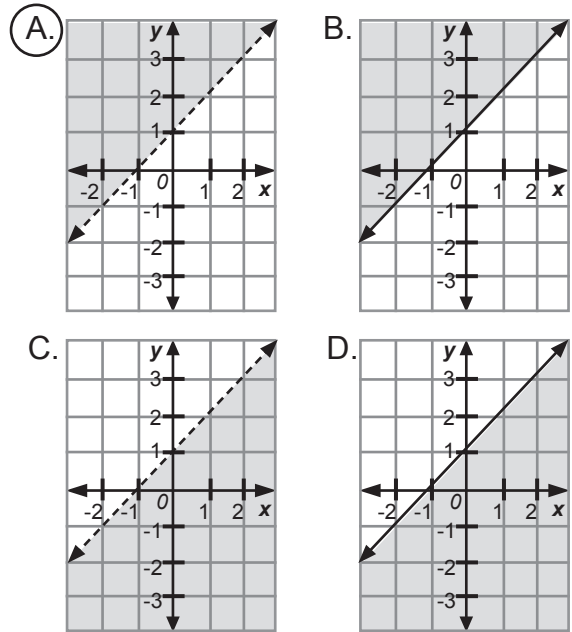
Circle the letter next to the correct answer.

14. Choose the solution of the equation, if  $x = 3$ .

$$6x - 3y = 9$$

- A.  $y = 9$
- B.  $y = 3$
- C.  $y = 0$
- D.  $y = -3$

15. Which is the graph of the inequality  $y > x + 1$ ?



16. Choose the equation that relates the total cost ( $y$ ) to the amount of beef ( $x$ ) ordered and delivered.

A butcher charges \$4.50 per pound for the best cut of beef. For an additional \$2.00, any order will be delivered.

- A.  $4.5x + y = 2$
- B.  $2 + 4.5y = x$
- C.  $y = 4.5x + 2$
- D.  $x = 2y + 4.5$

17. How many pounds of beef can be ordered and delivered for \$33.50?

A butcher charges \$4.50 per pound for the best cut of beef. For an additional \$2.00, any order will be delivered.

- A. 5.5 lb
- B. 6 lb
- C. 7 lb
- D. 7.5 lb



Circle the letter next to the correct answer.

18. Which is the equation of the boundary line for the graph of the inequality below?

$$3x + y > -6$$

- A.  $y = -3x - 6$
- B.  $y = 3x - 6$
- C.  $3y = -x + 6$
- D.  $6y = 3x - 6$

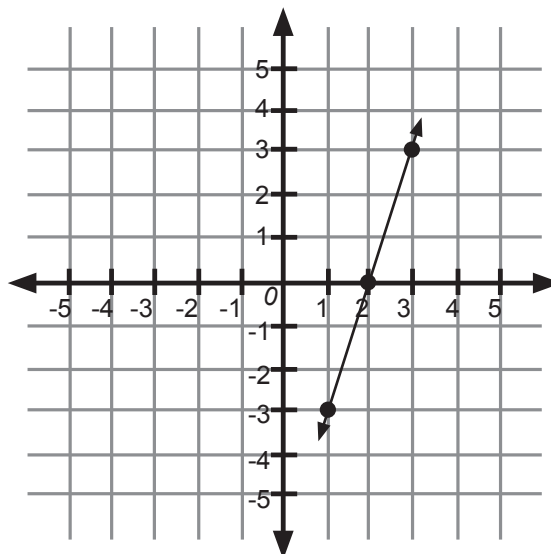
19. Choose the ordered pair that solves the following equation.

$$-x + 3y = 15$$

- A.  $(-1, 5)$
- B.  $(6, 7)$
- C.  $(0, 3)$
- D.  $(6, -7)$

20. What is the equation of the graph below?

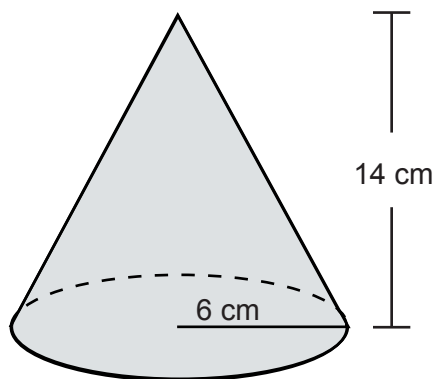
- A.  $3x - y = 6$
- B.  $3x + y = 6$
- C.  $x + 3y = 6$
- D.  $x - 3y = 6$





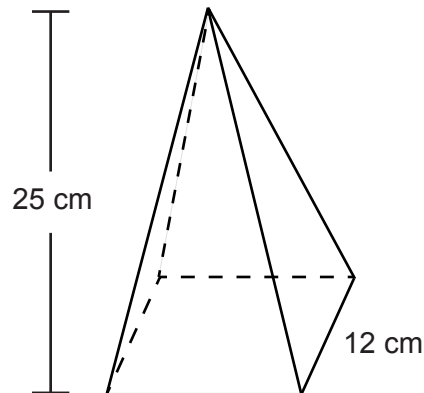
Circle the letter next to the correct answer.

21. Find the volume. Use  $\pi \approx 3.14$ .



- A.  $88 \text{ cm}^3$
- B.  $528 \text{ cm}^3$
- C.  $236.8 \text{ cm}^3$
- D.  $1582.6 \text{ cm}^3$

22. Find the volume of the square pyramid.



- A.  $3600 \text{ cm}^3$
- B.  $300 \text{ cm}^3$
- C.  $2400 \text{ cm}^3$
- D.  $1200 \text{ cm}^3$

23. What is the surface area of a sphere with a diameter of 12 m? Leave your answer in terms of  $\pi$ .

- A.  $48 \pi \text{ m}^3$
- B.  $144 \pi \text{ m}^2$
- C.  $288 \pi \text{ m}^3$
- D.  $576 \pi \text{ m}^2$

24. Evaluate.

$$\sqrt{64}$$

- A. 4
- B. 8
- C. 16
- D. 32

Circle the letter next to the correct answer.

25. Approximate to the nearest tenth.

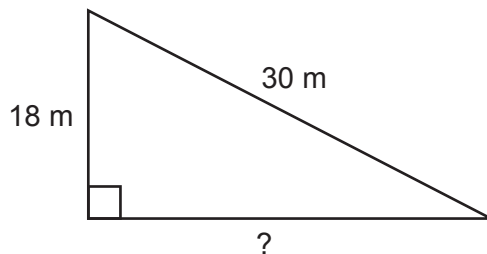
$$\sqrt{91}$$

- A. 9.5
- B. 9
- C. 8.5
- D. 8

26. What is the length of the hypotenuse of a right triangle if one leg is 9 feet long and the other leg is 6 feet long? Round to the nearest hundredth of a foot if necessary.

- A. 10.82 ft
- B. 15 ft
- C. 54 ft
- D. 54.28 ft

27. Find the missing length.



- A. 48 m
- B. 12 m
- C. 24 m
- D. 36 m

28. Find the mean for the following set of data.

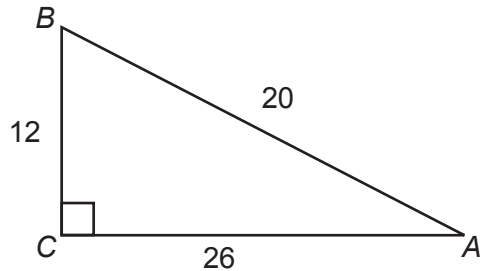
122, 108, 93, 112, 93, 120

- A. 108
- B. 109
- C. 110
- D. 112



Circle the letter next to the correct answer.

29. Give the value for the sine of  $\angle A$  in lowest terms.



- A.  $\frac{10}{13}$
- B.  $\frac{3}{5}$
- C.  $\frac{1}{2}$
- D.  $\frac{5}{8}$

30. Use the frequency distribution table below to compute the mean of the data.

$x$	$f$
5	2
10	3
15	4
20	2
30	1

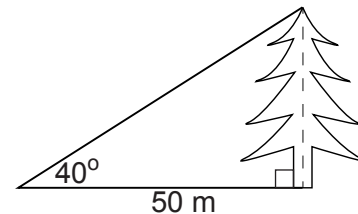
- A. 16
- B. 14.2
- C. 4
- D. 13.3

31. In the table below,  $X$  represents the possible values of a random variable and  $P(X)$  represents their probabilities of occurrence. Find the expected value of  $X$ .

$X$	2	5	10
$P(X)$	0.3	0.5	0.2

- A. 0.4
- B. 1.6
- C. 5.1
- D. 8.3

32. How tall is the tree in the diagram below? Give measure to the nearest tenth.



Use the following values for an angle with measure  $40^\circ$ :

$$\begin{aligned} \sin 40^\circ &\approx 0.6428 \\ \cos 40^\circ &\approx 0.7660 \\ \tan 40^\circ &\approx 0.8391 \end{aligned}$$

- A. 32.1 m
- B. 38.3 m
- C. 42.0 m
- D. 2000 m

Circle the letter next to the correct answer.

33. Divide the polynomial by the given monomial.

$$3b^5 + 8b^4 - 11b^3; b^3$$

- A.  $3b^2 + 8b - 11$
- B.  $3b^3 + 8b^2 - 11b^0$
- C.  $3b^2 + 8b - 11b^1$
- D.  $3b^3 + 8b - 11b$

34. Multiply the first polynomial by the second.

$$y^2 + 10y - 7; 3y + 4$$

- A.  $4y^2 + 40y - 28$
- B.  $3y^3 + 30y^2 + 21y - 28$
- C.  $y^3 + 28y^2 - 21y$
- D.  $3y^3 + 34y^2 + 19y - 28$

35. Subtract the second polynomial from the first.

$$-b^2 + 4b - b^3 - 4; b^4 + 3b^2 - b + 5$$

- A.  $-b^6 - 3b - b^2 - 1$
- B.  $-b^4 - b^3 - 4b^2 + 5b - 9$
- C.  $2b^2 + 3b - b^3 + 1$
- D.  $b^4 + b^3 - 3b^2 - b + 9$

36. Evaluate the polynomial for the given value of the variable.

$$4w^4 + w^3 - 3w^2; w = 3$$

- A. 6
- B. 39
- C. 244
- D. 324



Circle the letter next to the correct answer.

37. In how many different ways can you arrange 5 books side by side on a bookshelf?

- A. 10
- B. 25
- C. 60
- D. 120

38. Simplify.

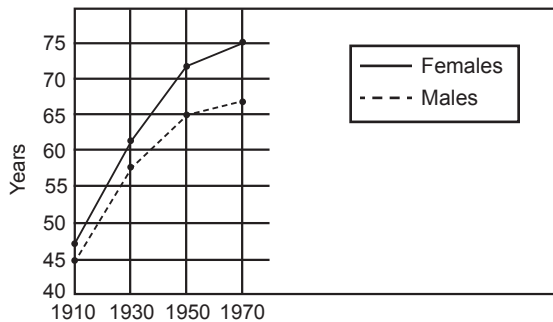
$$7n^2 \cdot 5n^9$$

- A.  $35n^{18}$
- B.  $35n^{11}$
- C.  $35n^9$
- D.  $35n^7$

39. Use the graph below to answer the question.

How much did the life expectancy of a female increase from 1930 to 1970?

U.S. Life Expectancy



- A. 13 years
- B. 15 years
- C. 62 years
- D. 75 years

40. Divide the first polynomial by the second.

$$3x^3 + 2x^2 - 7x + 2; x + 2$$

- A.  $3x^2 + 2x - 5$
- B.  $3 - x^2 - 1$
- C.  $x^3 + 3x^2 - 7x$
- D.  $3x^2 - 4x + 1$

