

SAMPLE PAGES
FOR
HSAP PRACTICE TESTS
MATHEMATICS

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Lexington/Richland School District 5

This workbook is a supplement to our highly successful series "*Challenge The HSAP.*" It consists of 10 complete Practice Tests for the Mathematics HSAP.



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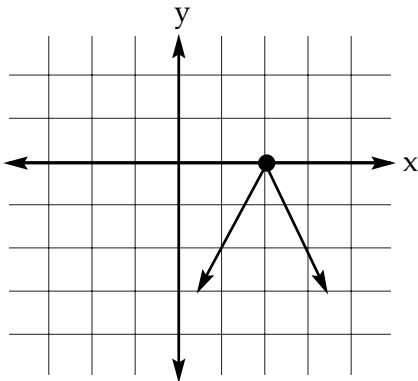
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SAMPLE PAGES FROM PRACTICE TEST 1

Directions: Read each question carefully.

Fill in the letter on the answer sheet provided that best answers the question.

1. Determine the domain and range of the graph below.



- a. domain: all real numbers
range: all real numbers
- b. domain: $x \leq 2$
range: all real numbers
- c. domain: $x \leq 2$
range: $y \leq 0$
- d. domain: all real numbers
range: $y \leq 0$
2. Solve the following inequality.
 $4x + 3 > -9$
- a. $x < 3$
- b. $x < 3/2$
- c. $x > -3/2$
- d. $x > -3$
3. "If $2(3a - 4) = 12$, then $6a - 8 = 12$ " is justified by the _____.
- a. associative property of multiplication
- b. multiplication property of equality
- c. addition property of equality
- d. distributive property

4. Which unit would be the most appropriate to measure the weight of the shot-put used in the track and field events in the 2004 summer Olympics.

- a. grams
- b. kilograms
- c. ounces
- d. milligrams

5. Determine which set of numbers contains only real numbers.

- a. $\{-1/2, \sqrt{9}, \pi, 0/4\}$
- b. $\{\sqrt{0}, -1, \sqrt{3}, 1/0\}$
- c. $\{\sqrt{-4}, 0, 3, 10\}$
- d. $\{3/0, \sqrt{4/16}, -0.2, \sqrt{-1}\}$

6. The population of Asia is about $3.4 \cdot 10^9$. The population of Africa is about $7 \cdot 10^8$. About how many more people live in Asia than live in Africa?

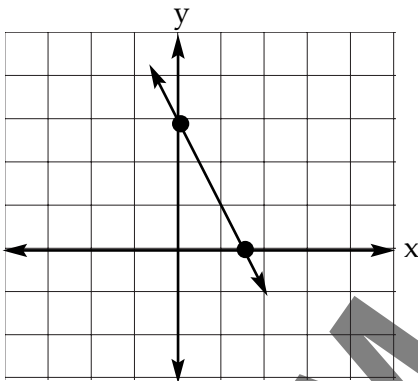
- a. 27,000,000
- b. 270,000,000
- c. 360,000,000
- d. 2,700,000,000

Practice Test 1

7. Jasmine received \$150 for her birthday and decided to use it to buy new clothes. While shopping at the mall, she found a pair of pants and several shirts she wanted to buy. Which of the following methods is the most appropriate for Jasmine to use to determine if she has enough money to buy the items?

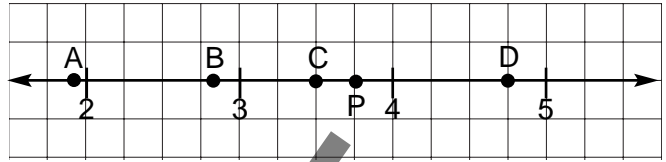
- a rough estimate
- an approximation
- an exact answer
- a calculator

8. What is the solution to the system of equations shown in the graph below?



- The system would have no solution
- The system would have infinitely many solutions
- The two lines are one in the same
- The two lines are parallel to each other

9. Look at the graph below where $\sqrt{p} = r$.



The location of the number r on the number line is *best* approximated by which point?

- A
- B
- C
- D

10. The graph of $y = x^2$ must pass through which two ordered pairs?

- (0,0) (-1, -1)
- (0,1) (1, -1)
- (-1, 1) (1, 1)
- (-1, 1) (1, 0)

11. Shady Grove Nursery is installing pine bark mulch in the school's flowerbeds. They determine the total dimensions of the beds to be 6 ft by 600 ft. If they are going to install a 2 inch deep layer of mulch, how much will it cost if Shady Grove charges \$18 per cubic yard for the mulch?

- \$3,600
- \$14,400
- \$1200
- \$43,200

12. A weather balloon in the shape of a sphere has a surface area of 160 square meters. If the formula for the surface area of a sphere is $SA = 4\pi r^2$, is it reasonable to say that the radius of the balloon is approximately 12.7 meters?
- yes, because 160 divided by 4π is approximately 12.7 meters
 - no, because to find the radius, the square root of 12.7 must be found
 - no, because r^2 is approximately 40; therefore, $r \approx 6$
 - yes, because 160 divided by 12 is approximately 13
13. The x variable in the equation $y = 2x + 3$ is *best* described as:
- the independent variable
 - the dependent variable
 - the range of the function
 - the function value
14. You are tired of the appearance of your bedroom, so you decide to redecorate. While watching "Trading Spaces" you saw an easy window treatment you decide to use in your bedroom. You measure your two windows and find that each window measures 27 inches wide and 52 inches high. If the material you want to buy only comes in square yards, how many yards of this material do you need to purchase?
- 1 square yard
 - $1\frac{1}{2}$ square yards
 - 2 square yards
 - $2\frac{1}{2}$ square yards
15. Which expression is equivalent to $\frac{8x^4 - 2x^2}{2x^2}$.
- $4x^2$
 - $6x^2$
 - $4x^2 - 1$
 - $6x^2 - 1$
16. Given $[A] = \begin{bmatrix} 2 & 4 \\ -1 & 1 \\ -6 & -1 \end{bmatrix}$ find $0.5[A]$.
- $\begin{bmatrix} 2 & 4 \\ 0.5 & 1 \\ -3 & -1 \end{bmatrix}$
 - $\begin{bmatrix} 1 & 2 \\ 0.5 & 0.5 \\ -3 & -0.5 \end{bmatrix}$
 - $\begin{bmatrix} 1 & 2 \\ -1 & 0.5 \\ -6 & -0.5 \end{bmatrix}$
 - $\begin{bmatrix} 3 \\ 0 \\ -3.5 \end{bmatrix}$
17. Simplify: $(x + 2)(-3x - 1)$.
- $-3x^2 - 7x - 2$
 - $-3x^2 - 5x - 2$
 - $3x^2 - 5x + 1$
 - $3x^2 + 5x + 2$

Practice Test 1

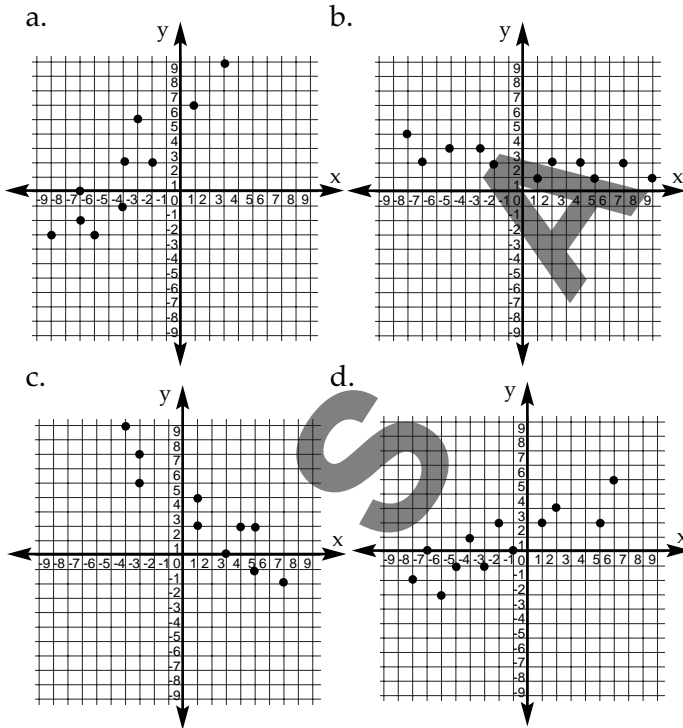
18. Simplify: $(2x^4)^3$.

- a. $8x^{12}$
- b. $6x^7$
- c. $2x^7$
- d. $2x^{12}$

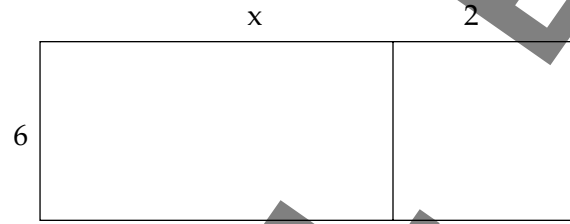
19. Jose has started saving for a new television. He saved \$75 last month and plans to add \$50 each month until he has saved at least \$400. Which inequality can be used to find m , the number of months it will take Jose to save for his television?

- a. $75m - 50 \geq 400$
- b. $50m + 75 \leq 400$
- c. $75m - 50 \leq 400$
- d. $50m + 75 \geq 400$

20. Which scatterplot most likely has a line-of-best-fit represented by $y = -x + 5$?

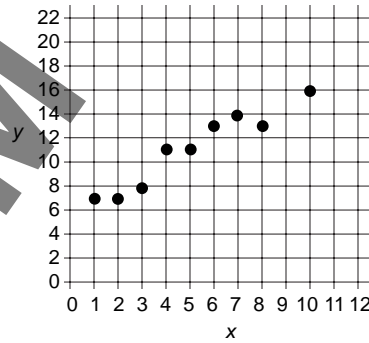


21. Which expression correctly represents the area of the rectangle below?



- a. $8x$
- b. $6(x + 2)$
- c. $(x + 2)(x + 6)$
- d. $6(2x)$

22. Based on the scatterplot, which x value would *best* match $y = 17$?



- a. 8
- b. 11
- c. 14
- d. 17

23. Which of the following is a root of $x^2 - 6x - 27 = 0$.

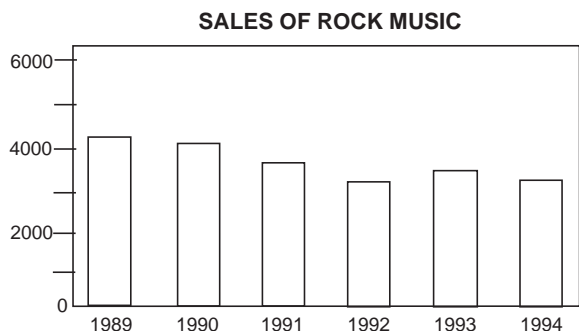
- a. -27
- b. -3
- c. -9
- d. -1

SAMPLE PAGES FROM PRACTICE TEST 3

Directions: Read each question carefully.

Fill in the letter on the answer sheet provided that best answers the question.

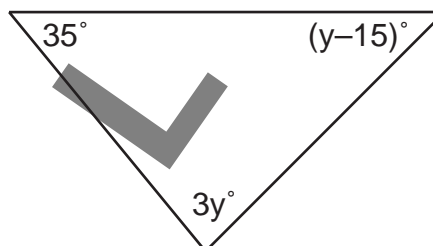
1. The graph shows the results of the sales of rock music from 1989 to 1994.



Based on the table, determine the year in which there was an increase in the sale of rock music.

- a. 1989
b. 1994
c. 1993
d. 1990
2. In your drafting class you want to make a scale drawing with a scale of 1 in = 4 ft. What would be the dimensions of your 14 ft-by-10 ft bedroom in this drawing?
- a. 56 in by 40 in
b. $3\frac{1}{2}$ in by $2\frac{1}{2}$ in
c. 7 in by 5 in
d. $\frac{2}{7}$ in by $\frac{2}{5}$ in

3. Determine the measure of each missing angle.

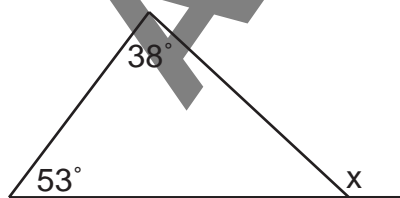


- a. $120^\circ, 25^\circ$
b. $35^\circ, 145^\circ$
c. $40^\circ, 25^\circ$
d. $145^\circ, 130^\circ$
4. The equation $C = \$0.05m + 4.95$ represents the cost (C) of a long distance telephone call m minutes. What does the rate of change represent in this situation?
- a. the initial charge for a call
b. the cost of a long distance call
c. the number of minutes of the call
d. the cost per minute
5. At an auction, the minimum bid for an antique chair is \$250. Is \$200 a reasonable bid?
- a. yes, because \$200 is less than \$250
b. no, because \$200 is less than \$250
c. yes, because the minimum amount allowed is \$250 and $\$200 < \250
d. no, because the most you can bid is \$250 and you bid \$200

Practice Test 3

6. Brendan says that when a rectangle with length 6 cm and width 4cm is dilated by a scale factor of 2, the perimeter and area of the rectangle are doubled. Which statement *best* explains what is incorrect about Brendan's statement?
- Brendan's statement is correct because doubling the dimensions doubles the area and perimeter.
 - The perimeter and area of the new rectangle should be divided by two instead of being multiplied by two.
 - Brendan's statement is incorrect because both the perimeter and area are quadrupled.
 - The perimeter is doubled but the area is multiplied by four.
7. Roberto wants to compare how his test grades have changed in his economics class during the semester. Which graph would *best* display the changes?
- bar graph
 - circle graph
 - scatter plot
 - line graph

8. Find the measure of x in the figure below.



- 89°
- 91°
- 9°
- 169°

9. A map of South Carolina is drawn to the scale 1 cm = 25 km. On the map, the distance from Rock Hill to Columbia is about 11.1 cm. About how far apart are the two cities?
- 2.3 km
 - 277.5 km
 - 282.2 km
 - 27.8 km
10. What is the best approximation of $\sqrt{70}$?
- 35, because $1/2$ of 70 is 35
 - 35, because $(35)^2$ is 70
 - between 8 and 9 because $\sqrt{70}$ is greater than $\sqrt{64}$ and less than $\sqrt{81}$
 - close to 8 because $\sqrt{70}$ is greater than $\sqrt{64}$

11. Order the steps below to solve the system of equations using linear combinations.

$$\text{Equation 1 } y = -x + 4$$

$$\text{Equation 2 } 2x - y = 6$$

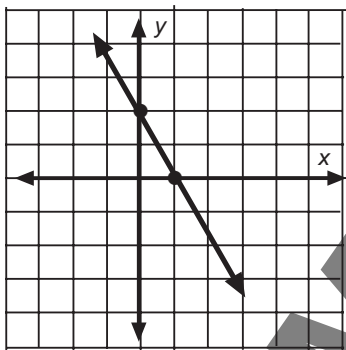
- Substitute $-x + 4$ into y in equation 2
 - Transpose $-x$ in equation 1
 - Add equation 1 and equation 2 to eliminate one variable
 - Multiply equation 1 by -1
 - Substitute the known variable value into either original equation to solve for the remaining unknown variable
- I, III, V
 - I, IV, III, V
 - II, III, V
 - I, IV, III, V

12. Which equation *most likely* describes the relation indicated by the table?

x	y
-4	8
0	4
2	2
5	-1

- a. $y = x + 4$
- b. $y = x - 2$
- c. $y = -x + 4$
- d. $y = -x - 8$

13. Which table *most likely* matches this graph?



a.

x	y
2	0
2	2
0	1

b.

x	y
1	0
2	3
3	1

c.

x	y
0	2
3	-4
1	0

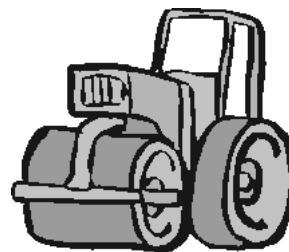
d.

x	y
0	1
2	2
4	3

14. Write the equation of a line, in standard form, having a slope of $1/2$ and passing through the point $(-2,4)$.

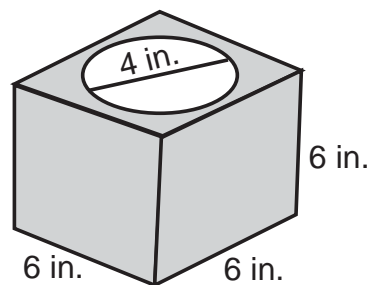
- a. $x - 2y = -10$
- b. $2y = x + 10$
- c. $2y - x = -10$
- d. $x + y = -5$

15. The drums of the roller are cylinders of length 3.5 ft. The diameter of the large drum is 4.2 ft. What area does the large drum cover in one full turn? Round your answer to the nearest square foot?



- a. 46 ft^2
- b. 74 ft^2
- c. 48 ft^2
- d. 55 ft^2

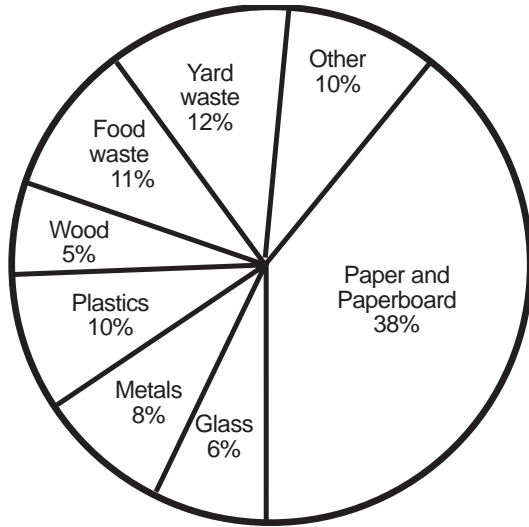
16. Find the volume of the shaded area. Round your answer to the nearest tenth.



- a. 140.6 in^3
- b. 216.0 in^3
- c. 115.5 in^3
- d. 291.4 in^3

Practice Test 3

17. The graph shows types of household trash discarded in Greenville, S. C.



Which type of trash occupies the majority of the trash discarded?

- a. glass
- b. wood
- c. yard waste
- d. paper and paper board

18. Find the next two terms in the pattern below.

1, $1/2$, $1/4$, $1/8$, ...

- a. $1/14$, $1/22$
- b. $1/10$, $1/12$
- c. $1/16$, $1/32$
- d. $1/16$, $1/24$

19. Find the equation of the line that passes through the points (9,2) and (3,6).

- a. $y = (2/3)x - 8$
- b. $y = (2/3)x + 8$
- c. $y = (-2/3)x - 8$
- d. $y = (-2/3)x + 8$

20. Which of the following sets of data represents a linear function?

a.

x	0	1	2	3	4	5
y	1	5	25	125	625	3125

b.

x	1	2	3	4	5
y	25	30	35	40	45

c.

x	0	1	2	3	4
y	20	60	180	540	1620

d.

x	2	3	4	5	6
y	1	3	6	10	15

21. A box of detergent shaped like a rectangular prism is 6 inches high and holds 3.25 lbs. of detergent. How much detergent would a similar box that is 8 inches high hold?

- a. about 7.7 lbs
- b. about 4.3 lbs
- c. about 2.4 lbs
- d. about 5.4 lbs

22. Measure the segment to the nearest centimeter.



- a. 5.7 cm
- b. 5.2 cm
- c. 5 cm
- d. 4.8 cm

SAMPLE OPEN-ENDED QUESTIONS FROM PRACTICE TEST 5

Directions: Read each question carefully. Write your answer in the space provided.

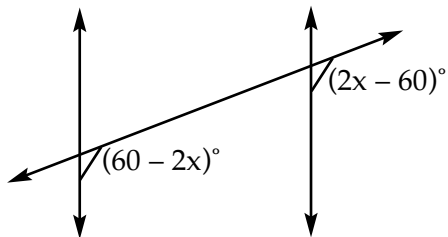
1. Which of the following is the *most* appropriate statement about 37% of 64? Circle your answer.
- a. it is greater than 64
 - b. it is less than 64
 - c. it is less than 32
 - d. it is greater than 32

Explain how you would derive your answer without using a calculator.

2. If the sum of the sides of a right triangle is 49 inches and the hypotenuse is 41, find the two sides.

Practice Test 5

3. The diagram contains contradictory information. What is it? Why is it contradictory?



4. Imagine that the annual population increase over a 10-year period is given in the table below.

Population Increase	
Year	Increase from previous
1	53,377
2	52,170
3	67,000
4	90,332
5	72,681
6	65,226
7	76,777
8	83,657
9	77,753
10	82,892

a. Calculate the mean annual population increase over the 10-yr period.

b. Calculate the median annual population increase over the 10-yr period.

c. Do you think the difference between these two measures is significant? Give reasons for your answer and explain which result gives a better indication of the data's center.
