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Mathematics

HiSET® Exam Free Practice Test FPT – 6A

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Formula Sheet

Perimeter / Circumference

Rectangle

$Perimeter = 2(length) + 2(width)$

Circle

$Circumference = 2\pi(radius)$

Area

Circle

$Area = \pi(radius)^2$

Triangle

$Area = \frac{1}{2}(base)(height)$

Parallelogram

$Area = (base)(height)$

Trapezoid

$Area = \frac{1}{2}(base_1 + base_2)(height)$

Volume

Prism/Cylinder

$Volume = (area\ of\ the\ base)(height)$

Pyramid/Cone

$Volume = \frac{1}{3}(area\ of\ the\ base)(height)$

Sphere

$Volume = \frac{4}{3}\pi(radius)^3$

Length

1 foot = 12 inches

1 yard = 3 feet

1 mile = 5,280 feet

1 meter = 1,000 millimeters

1 meter = 100 centimeters

1 kilometer = 1,000 meters

1 mile ≈ 1.6 kilometers

1 inch = 2.54 centimeters

1 foot ≈ 0.3 meter

Capacity / Volume

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon = 231 cubic inches

1 liter = 1,000 milliliters

1 liter ≈ 0.264 gallon

Weight

1 pound = 16 ounces

1 ton = 2,000 pounds

1 gram = 1,000 milligrams

1 kilogram = 1,000 grams

1 kilogram ≈ 2.2 pounds

1 ounce ≈ 28.3 grams

Mathematics

Directions

Time – 45 minutes

25 Questions

This is a test of your skills in applying mathematical concepts and solving mathematical problems. Read each question carefully and decide which of the five alternatives best answers the question. Then mark your choice on your answer sheet.

There are relatively easy problems scattered throughout the test. Thus, do not waste time on problems that are too difficult; go on, and return to them if you have time.

Work as quickly as you can without becoming careless. Try to answer every question even if you have to guess.

Mark all your answers on the answer sheet. Give only one answer to each question.

If you decide to change one of your answers, be sure to erase the first mark completely.

Be sure that the number of the question you are answering matches the number of the row of answer choices you are marking on your answer sheet. The answer sheet may contain more rows than you need.

1

Computer salespeople at a local store earn a $100 commission per computer for the first 5 computers they sell each month. For every additional computer they sell during that month, the commission per computer is 1.5 times the rate for the first five. Which of the following is the total commission earned by a salesperson who sells 8 computers in a month?

A. $190

B. $800

C. $950

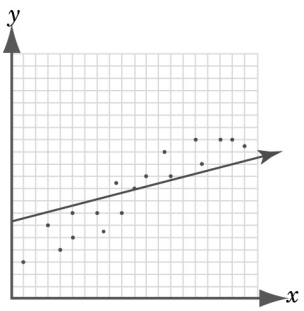
D. $1,050

E. $1,200

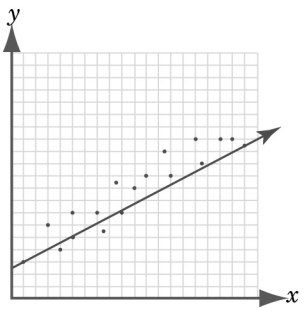
2

Which line would best fit the data shown in the scatter plot?

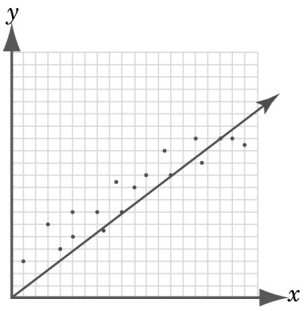
A.



B.



C.



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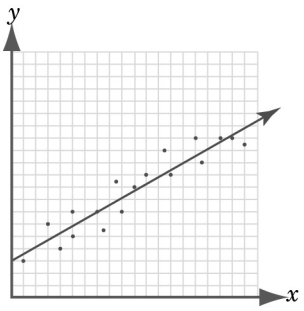
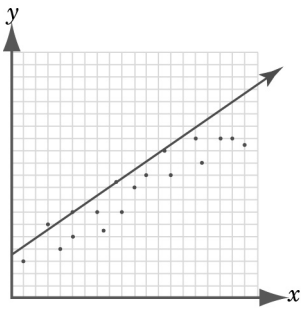


E.



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GO ON

3

In the standard (x, y) coordinate plane, for what value(s) of x will the graphs of $f(x) = |x|$ and $g(x) = |x|$ intersect?

A. $x = 1$ only

B. $x = 0$ and 1 only

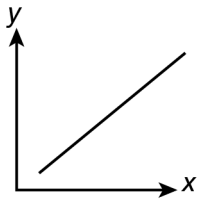
C. $x > 0$ only

D. $x \geq 0$ only

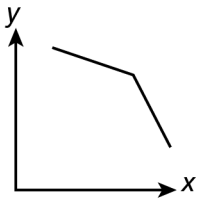
E. All real numbers x

4

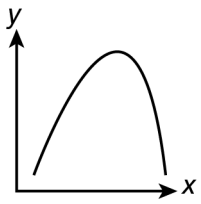
Which graph could represent the relationship between x and y, if it is known that y always decreases as x increases?



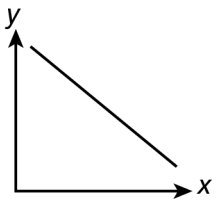
I



II



III



IV

A. I only

B. IV only

C. I and IV only

D. II and III only

E. II and IV only

5

What are the coordinates of the vertex of the parabola represented by the equation $y = -5x^2 + 30x - 25$?

A. $(6, -25)$

B. $(5, 0)$

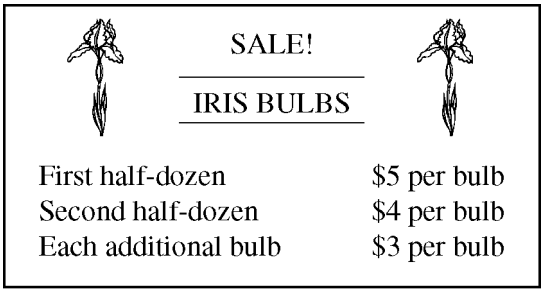
C. $(3, 20)$

D. $(1, 0)$

E. $(-3, -160)$

6

Consider the following advertisement.



Which of the following calculations represents the cost of 2 dozen iris bulbs?

A. $24 \times \$3$

B. $\$5 + (2 \times \$4) + (12 \times \$3)$

C. $(6 \times \$5) + (6 \times \$4) + (12 \times \$3)$

D. $(12 \times \$5) + (12 \times \$4)$

E. $\left(\frac{1}{2} \times \$5\right) + \left(\frac{1}{2} \times \$4\right) + (12 \times \$3)$

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GO ON

7

At a movie rental machine, the movies rent for $3.00, except on Tuesdays, when they rent for $0.49. Approximately what percent of the regular cost is saved by renting a movie on a Tuesday?

A. 94%
B. 84%
C. 60%
D. 40%
E. 16%

8

The wood floor of a community recreation center is in the shape of a square that is 200 feet by 200 feet. If directions on a bottle of floor wax indicate that $\frac{1}{2}$ of a bottle will cover approximately 2,000 square feet, about how many full bottles of floor wax are needed to wax the wood floor?

A. 5
B. 10
C. 20
D. 40
E. 100

9

A couch advertised for $500 can be purchased for a down payment of $200 plus 5 equal monthly installments. What is the amount of each monthly payment?

A. $300
B. $100
C. $80
D. $60
E. $40

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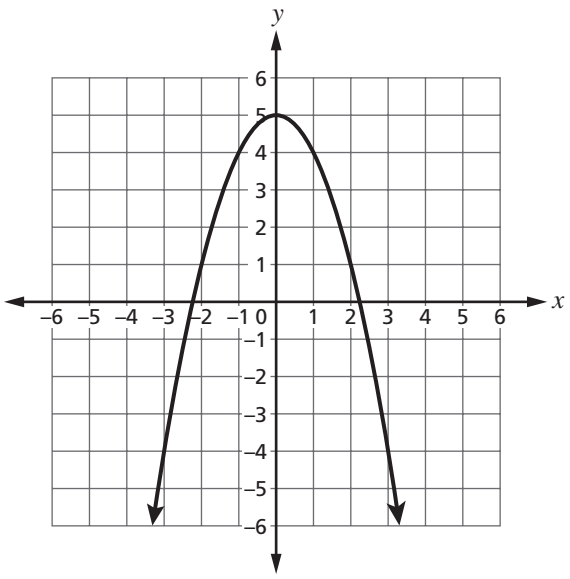
10

The function $y = f(x)$ is graphed in the standard (x, y) coordinate plane as shown. Which of the following values is the average rate of change of the function from $x = 1$ to $x = 3$?



A. -4

B. -1

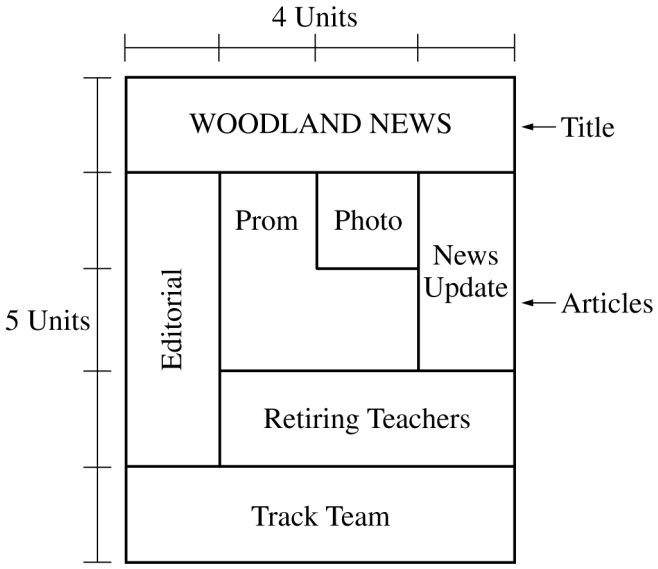
C. $-\frac{8}{3}$

D. $-\frac{3}{8}$

E. $-\frac{1}{4}$

Question 11 refers to the following information.

A local newspaper is featuring news about the end of the school year on the front page, including articles on the senior prom, the state-champion track team, and the retiring teachers. The following diagram shows the planned layout of the front page. Each layout area is either a rectangle or a combination of rectangles.



11

What percent of the front page is taken up by the prom story, including the prom photograph?

A. 20%

B. 22%

C. 25%

D. 45%

E. 60%

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GO ON

12

Each side of Rectangle A is 5 times as long as each corresponding side of Rectangle B. The area of Rectangle A is how many times the area of Rectangle B?

A. 5

B. 10

C. 20

D. 25

E. 125

13

Polygon A will be translated in a coordinate plane using the following rule.

$$(x, y) \rightarrow (x + 3, y - 4)$$

The image will be named Polygon B. Which of the following describes the translation from Polygon A to Polygon B?

A. 3 units up and 4 units left

B. 3 units up and 4 units right

C. 3 units left and 4 units down

D. 3 units right and 4 units up

E. 3 units right and 4 units down

14

Which of the following expressions is equivalent to $\frac{10a^6}{-2a^3}$?

A. $-5a^2$

B. $-5a^3$

C. $8a^2$

D. $12a^2$

E. $12a^3$

15

The sale price of a hat Tyler wants to buy is 20% off the regular price. One way to determine the sale price is for Tyler to

A. multiply the regular price by 0.20.

B. multiply the regular price by $(1 - 0.20)$.

C. divide the regular price by 0.20.

D. divide the regular price by $(1 - 0.20)$.

E. divide the regular price by $(1 + 0.20)$.

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GO ON

16

A scientist found that the height of a mountain increased by approximately 5×10^{-4} meters each month. If this rate of change continues, by how many meters will the height of the mountain increase in 1 year?

A. 6×10^{-3}

B. 6×10^{-4}

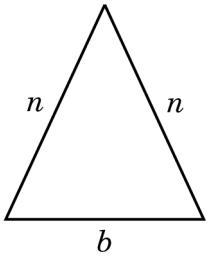
C. 6×10^{-5}

D. 12×10^{-4}

E. 17×10^{-4}

17

The formula for the perimeter, P, of the triangle shown is $P = 2n + b$.



Which formula is equivalent to the perimeter formula but is solved for n ?

A. $n = \frac{P + b}{2}$

B. $n = 2P + b$

C. $n = \frac{P - b}{2}$

D. $n = \frac{P}{2} - b$

E. $n = \frac{P}{2} + b$

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GO ON

18

Which of the following expressions is equivalent to $\frac{x^2 + 3x + 1}{x + 1}$?

A. $x + 2$

B. $x + 3$

C. $x + 2 - \frac{1}{x + 1}$

D. $x + 3 + \frac{1}{x + 1}$

E. $x + 4 + \frac{5}{x + 1}$

19

The amount of hot cocoa powder remaining in a can is $6\frac{1}{4}$ tablespoons. A single serving consists of $1\frac{3}{4}$ tablespoons of the powder. What is the total number of servings of the powder remaining in the can?

A. $3\frac{1}{2}$

B. $3\frac{4}{7}$

C. $4\frac{3}{7}$

D. $4\frac{1}{2}$

E. 6

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20

A basket that contains 2 apples, 3 bananas, 6 oranges, and 4 pears is in the workroom. When Ms. Hutchinson went to the workroom, other workers had already taken 1 banana, 2 oranges, and 1 pear. From the remaining fruit, Ms. Hutchinson randomly took 3 pieces of fruit separately from the basket. If each fruit is equally likely to be chosen, what is the probability that the third piece was an orange if the first two she took were also oranges?

A. $\frac{4}{165}$

B. $\frac{9}{11}$

C. $\frac{4}{11}$

D. $\frac{3}{11}$

E. $\frac{2}{9}$

21

On a trip to visit friends, a family drives 65 miles per hour for 208 miles of the trip. If the entire trip was 348 miles and took 6 hours, what was the average speed, in miles per hour, for the rest of the trip?

A. 44

B. 50

C. 51

D. 58

E. 60

22

Which expression is equivalent to $\frac{6x^2 + 4x}{2x}$?

A. $7x$

B. $5x^2$

C. $3x + 2$

D. $6x^2 + 2$

E. $3x^2 + 2x$

23

Which set of ordered pairs represents a function?

A. $\{(-5, 5), (4, 8), (-5, -6)\}$

B. $\{(-1, -1), (-1, 6), (-1, -10)\}$

C. $\{(-3, 7), (2, 5), (-7, 7)\}$

D. $\{(2, 3), (-2, 4), (-2, -5)\}$

E. $\{(2, 3), (3, 2), (2, 5)\}$

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GO ON

24

$$\frac{x-8}{24} = \frac{3}{4}$$

What is the value of x in the equation?

A. 10

B. 20

C. 26

D. 31

E. 40

25

Matthew's age (m) is three years more than twice Rita's age (r). Which equation shows the relationship between their ages?

A. $m = \frac{r-3}{2}$

B. $m = \frac{r+3}{2}$

C. $m = 2(r+3)$

D. $m = 2r - 3$

E. $m = 2r + 3$

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STOP

Answer Key

Sequence Number	Correct Response	Content Category	Question Difficulty
1	C	I. Numbers and Operations on Numbers	Medium
2	D	III. Data Analysis/Probability/Statistics	Easy
3	E	IV. Algebraic Concepts	Medium
4	E	IV. Algebraic Concepts	Medium
5	C	IV. Algebraic Concepts	Hard
6	C	I. Numbers and Operations on Numbers	Medium
7	B	I. Numbers and Operations on Numbers	Medium
8	B	II. Measurement/Geometry	Medium
9	D	I. Numbers and Operations on Numbers	Medium
10	A	IV. Algebraic Concepts	Medium
11	A	II. Measurement/Geometry	Medium
12	D	II. Measurement/Geometry	Medium
13	E	II. Measurement/Geometry	Easy
14	B	I. Numbers and Operations on Numbers	Medium
15	B	I. Numbers and Operations on Numbers	Hard
16	A	I. Numbers and Operations on Numbers	Hard
17	C	IV. Algebraic Concepts	Medium
18	C	IV. Algebraic Concepts	Hard
19	B	I. Numbers and Operations on Numbers	Medium
20	E	III. Data Analysis/Probability/Statistics	Hard
21	B	I. Numbers and Operations on Numbers	Hard
22	C	IV. Algebraic Concepts	Medium
23	C	IV. Algebraic Concepts	Medium
24	C	IV. Algebraic Concepts	Medium
25	E	IV. Algebraic Concepts	Medium

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