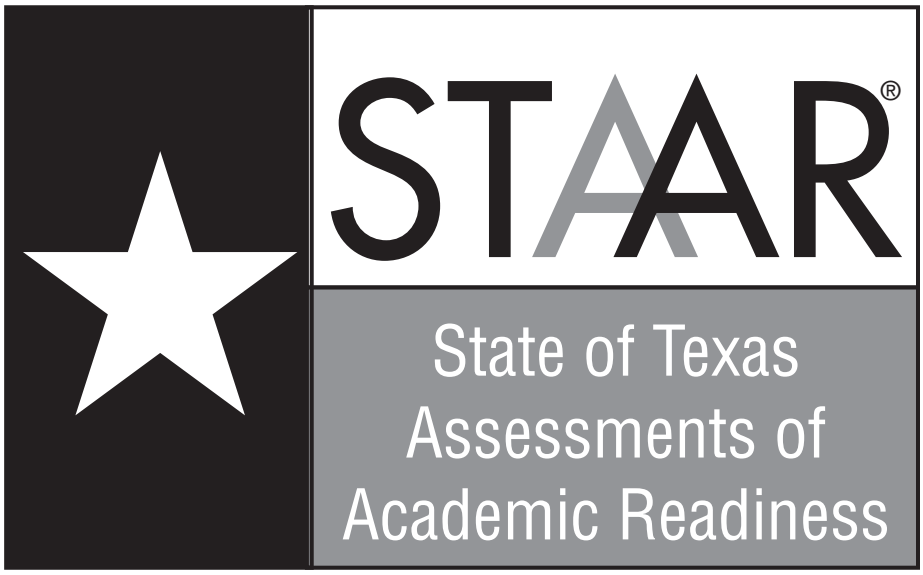

GRADE 8

Mathematics

Administered April 2019

RELEASED

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MATHEMATICS

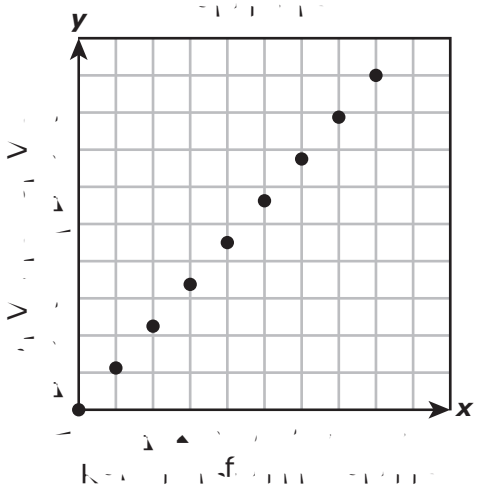
DIRECTIONS

Read each question carefully. For a multiple-choice question, determine the best answer to the question from the four answer choices provided. For a griddable question, determine the best answer to the question. Then fill in the answer on your answer document.

1 Oscar buys his lunch in the school cafeteria. The cost of 15 school lunches is $33.75.

Which graph has a slope that best represents the average cost of the lunches in dollars per lunch?

A



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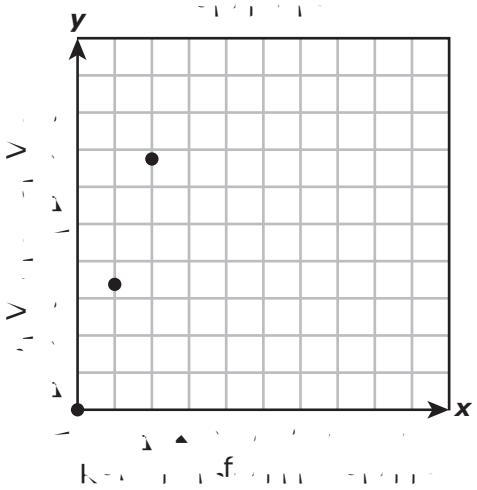

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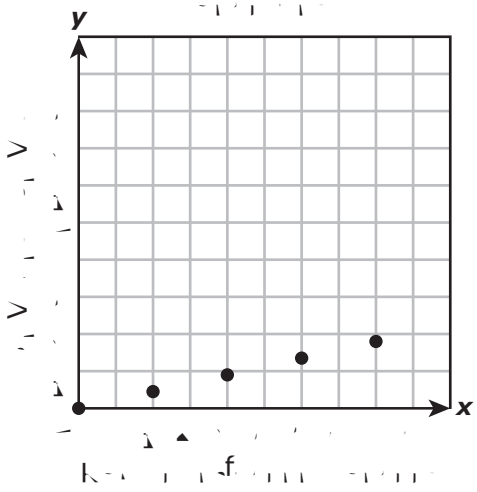
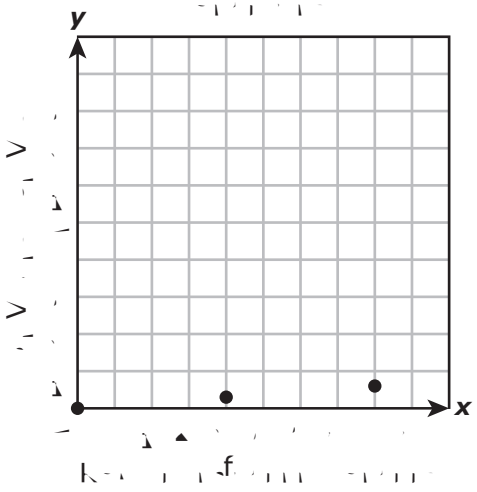
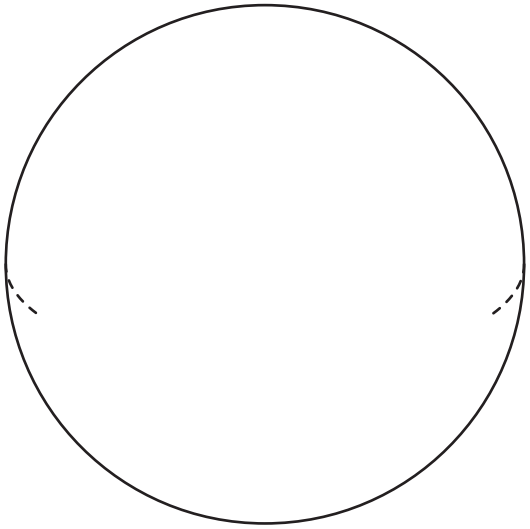
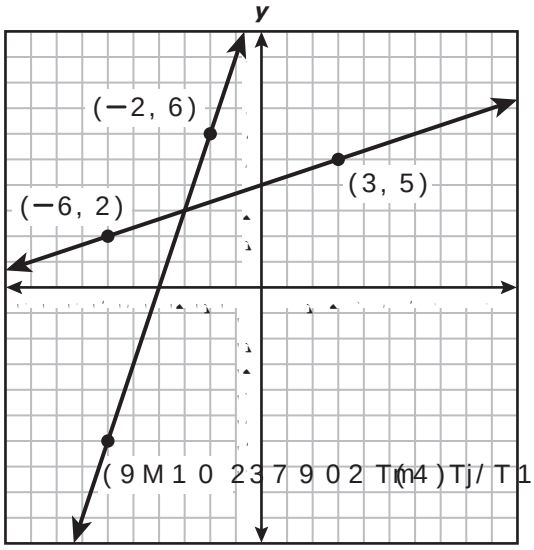


D



2 A sphere and its dimension are shown in the diagram.





(9M10 237902 Tm(4)Tj/T10 089M10 237902 Tm(4)Tj/T1T4

4 Figure I and Figure II are similar figures.

$\frac{\quad}{\quad}$ $\frac{\quad}{\quad}$

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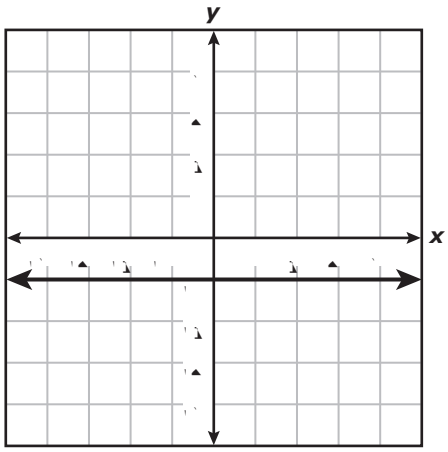
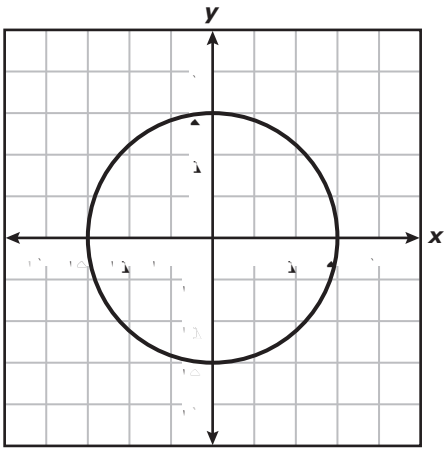
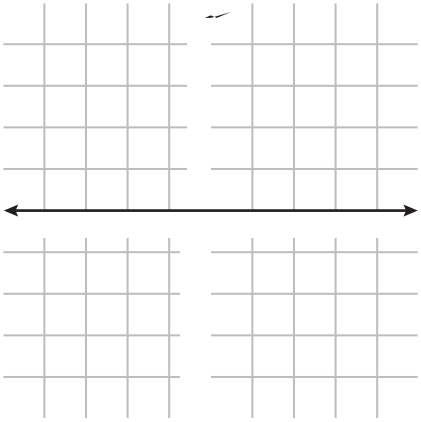

y
x


y
x



6 A polygon will be dilated on a coordinate grid to create a smaller polygon. The polygon is dilated using the origin as the center of dilation.

Which rule could represent this dilation?

F $(\ ,\ ) \rightarrow (0.5 -\ ,\ 0.5 -\ )$

G $(\ ,\ ) \rightarrow (\ -7,\ -7)$

H $(\ ,\ ) \rightarrow (\frac{5}{4}\ ,\ \frac{5}{4}\ )$

J $(\ ,\ ) \rightarrow (0.9\ ,\ 0.9\ )$

7 Aquarium I contains 4.6 gallons of water. Louise will begin filling Aquarium I at a rate of 1.2 gallons per minute.

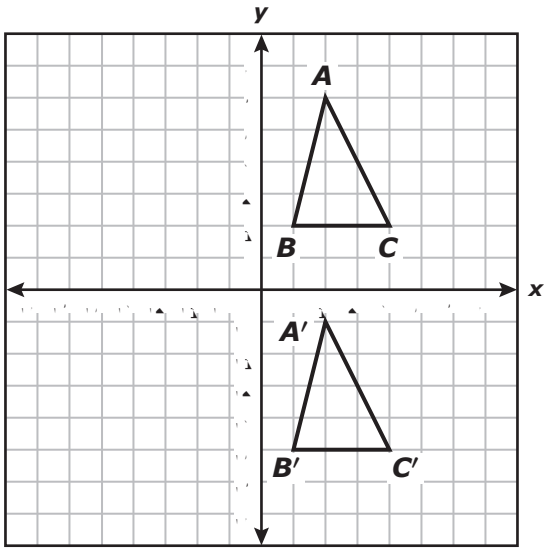
Aquarium II contains 54.6 gallons of water. Isaac will begin draining Aquarium II at a rate of 0.8 gallon per minute.

After how many minutes will both aquariums contain the same amount of water?

A 148 min

B 125

10 Triangle was transformed to create triangle ′ ′ ′.



Which rule best describes this transformation?

F (,) → (, – 7)

G (,) → (,–)

H (,) → (– 7,)

J (,) → (– ,)

---

11 Two customers took out loans from a bank.

- Henry took out a 4-year loan for $5,000 and paid 4.2% annual simple interest.
- Ingrid took out a 6-year loan for $5,000 and paid 3.9% annual simple interest.

What is the difference between the amounts of interest Henry and Ingrid paid for their loans?

A $417

B $150

C $60

D $330

12 A coach is ordering shirts for a team.

- The coach pays a one-time fee of $24.
- The coach also pays $8 for each shirt ordered.

Which function can be used to find , the total amount the coach pays in dollars when shirts are ordered?

F $= 8 + 32$

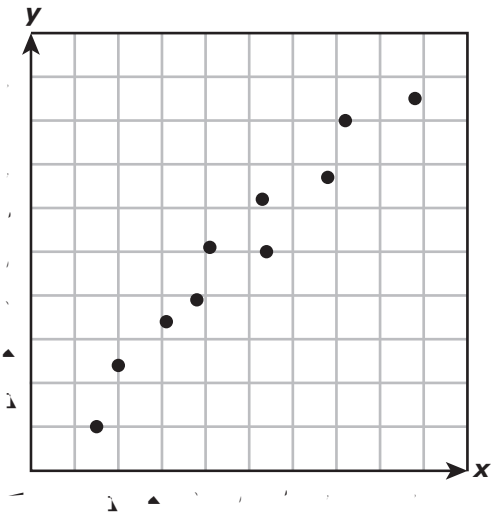
G $= 8 + 24$

H $= 32 + 8$

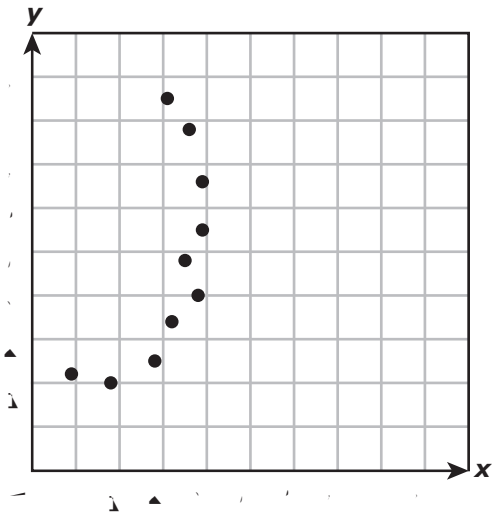
J $= 24 + 8$

13 Which scatterplot does NOT suggest a linear relationship between and ?

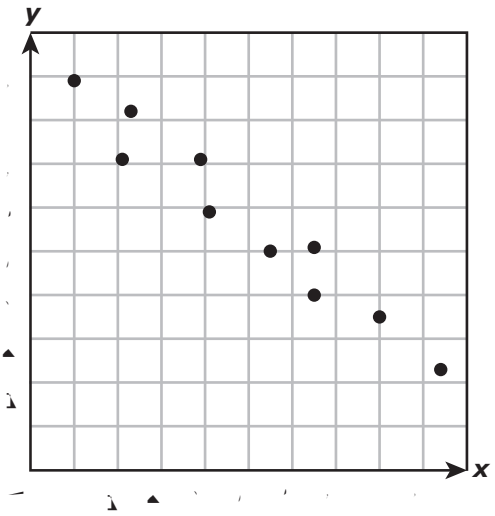
A



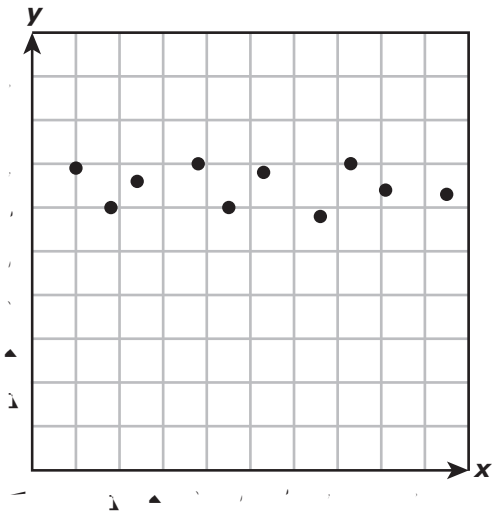
C



B



D



GO ON

14 What value of makes this equation true?

$$12 \quad -15 = 6 - 3$$

F $\frac{7}{3}$

G $\frac{3}{7}$

H $\frac{5}{7}$

J $\frac{7}{5}$

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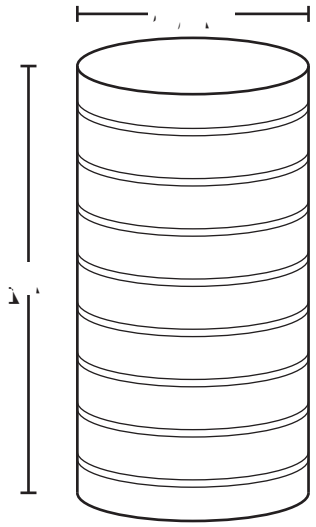
15 A silo is a building shaped like a cylinder used to store grain. The diameter of a particular silo is 6.5 meters, and the height of the silo is 12 meters.



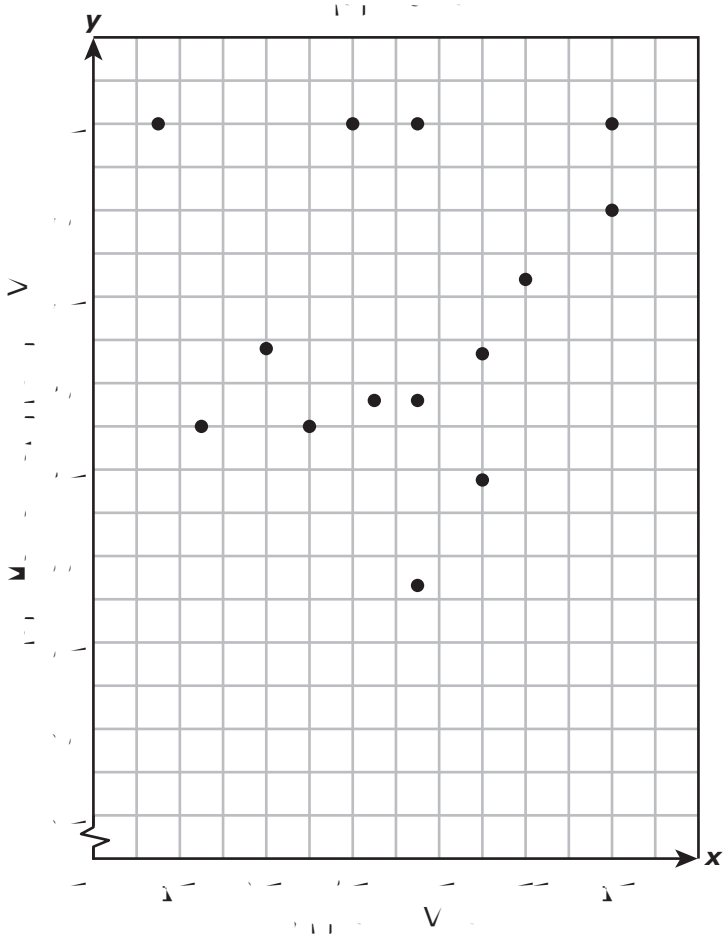
Which equation can be used to find , the volume of this silo in cubic meters?

A $= \pi(3.25)^2(12)$

B $= \pi(6.5)^2(12)$

C $= \pi(12)$ 24SDf 1.14m0 14m0.14m0.14m0.14m0.1.3 >>BDC /TT0 1 Tf 9.970 Td (meters.)Tj /r0s]TJj /70f,Td (=)Tj /T1_1 2

16 The scatterplot shows the energy in watts and the light output in lumens per watt of several lightbulbs.



Which statement best describes the association between the energy and light output of these lightbulbs?

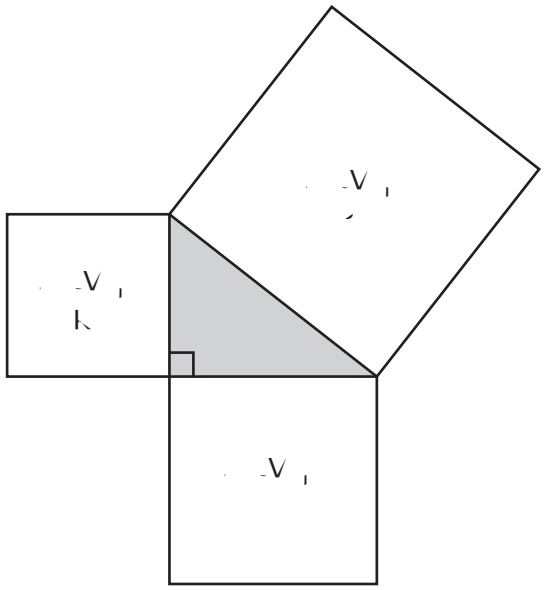
F As the energy increases, the light output increases.

G As the energy increases, the light output decreases.

H As the energy increases, the light output remains the same.

J There is no apparent association between the energy and light output.

19 The diagram shows three squares that are joined at vertices to form a right triangle.



Which statement is true?

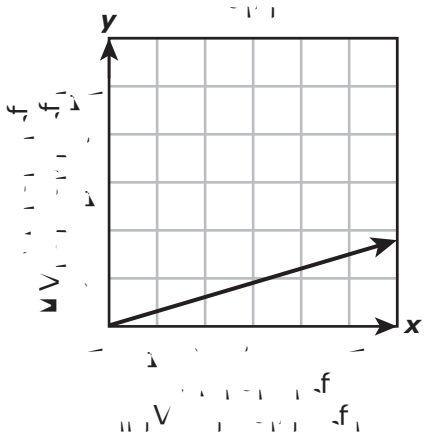
A The sum of the areas of Square N and Square L is equal to the area of Square K.

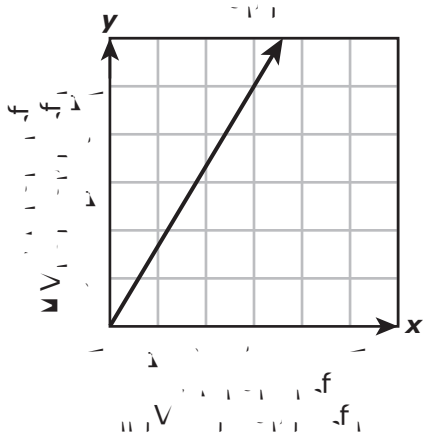
B The sum of the areas of Square N and Square L is greater than the area of Square K.

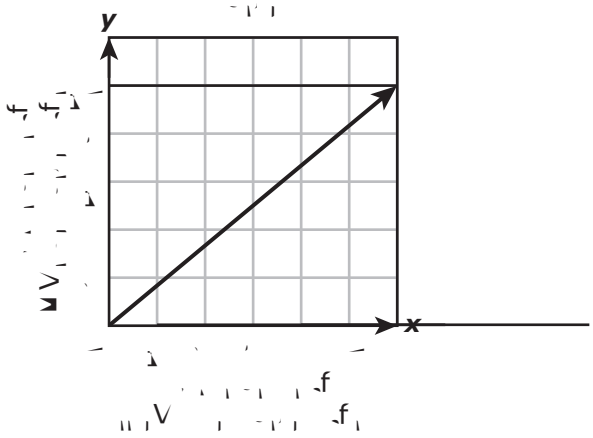
C The sum of the areas of Square N and Square K is equal to the area of Square L.

D The sum of the areas of Square N and Square K is less than the area of Square L.

20 A bottle contains 30 fluid ounces of orange juice and 18 fluid ounces of pineapple juice. Which graph has a slope that best represents the ratio of orange juice to pineapple juice in this bottle?







22 Quadrilateral is dilated by a scale factor of $\frac{3}{4}$ to create quadrilateral $'\ '\ '\ '$. The perimeter of quadrilateral is units.

What is the perimeter in

—

—

—

24 A polygon is graphed on a coordinate grid with (,) representing the location of a certain point on the polygon. The polygon is transformed using the rule (,) → (,).

Which statement must be true?

F If is greater than 1, the image of the polygon is congruent to the polygon.

G If is between 0 and 1, the image of the polygon is congruent to the polygon.

H If is greater than 1, the image of the polygon is smaller than the polygon.

J If is between 0 and 1, the image of the polygon is smaller than the polygon.

---

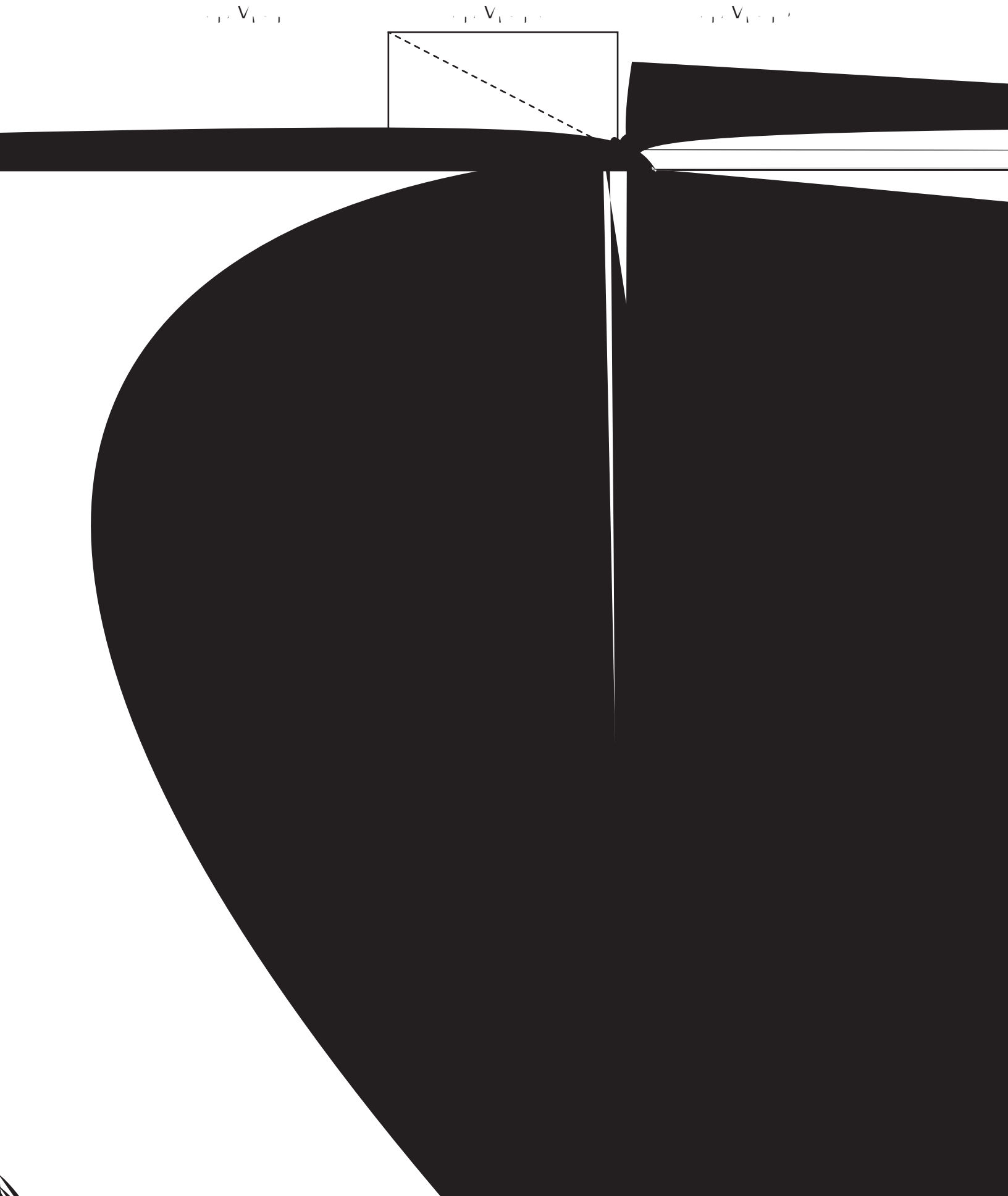
25 At a store each notebook has a cost of dollars. Which situation can be represented by this inequality?

$$5 < 3 + 2$$

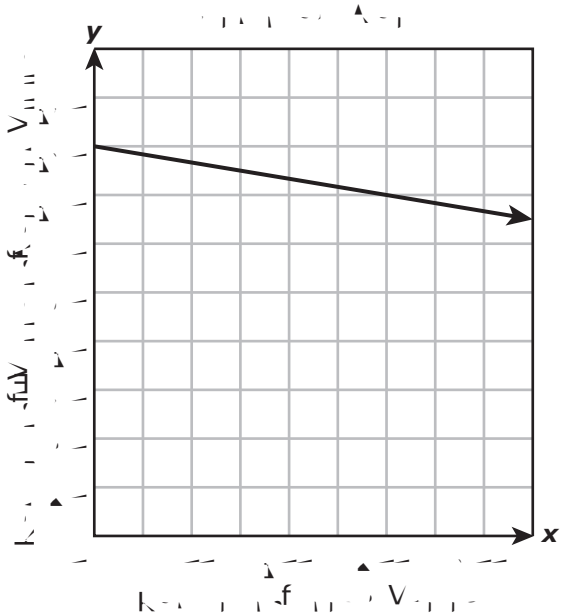
A

---

27 The diagonal lengths of three rectangles are shown. The rectangles are not drawn to scale.



28 The graph shows the relationship between the number of gallons of fuel remaining in the tank of a semitruck and the number of miles traveled by the semitruck.



Which function can be used to find , the number of gallons of fuel remaining in the tank of the semitruck after it has traveled miles?

F $= 240 - 30$

G $= -\frac{1}{6} + 240$

H $= 240 - 10$

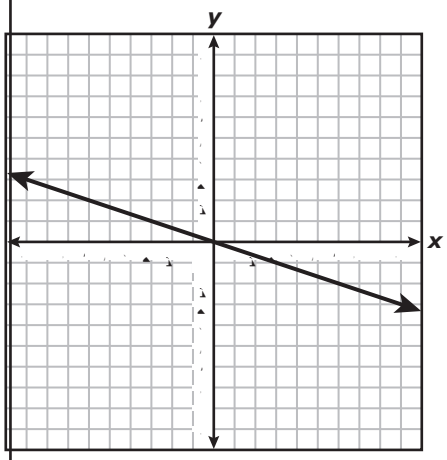
$= -\frac{1}{10} + 240$

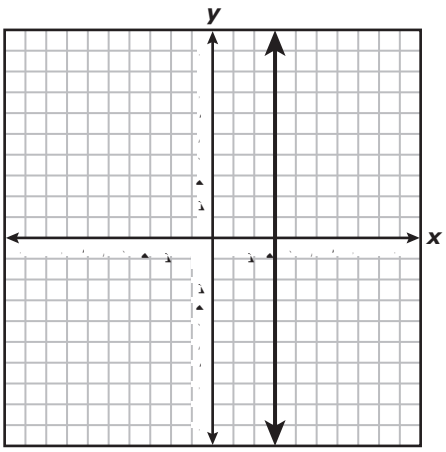
semitruck0.8thi06 0 Td (traveled)Tj /T1_0 1 Tf ( )T71 Tf 1.1f 4.236 0 Td (of)Tj /T1_0 1 Tf ( )Tj /T1_1 1 Tf 1.writte58

30 Helen had $330 in her savings account when Vince opened a savings account with zero dollars.

- Helen deposited $30 into her account each week for weeks.
- Vince deposited $50 into his account each week for weeks.
- The accounts did not earn interest.

w$60 7w 732s4 73 3Tf 237 0w 203 T1 (week) T j / T1 _ 01 9 22equality


y
x


y
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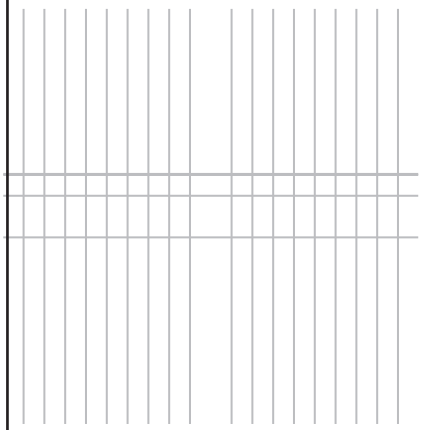
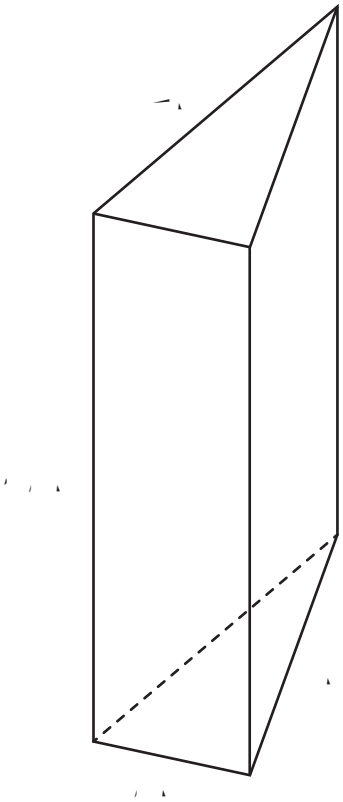


34 The side lengths of the base of a triangular prism are 5 meters, 8 meters, and 10 meters. The height of the prism is 16.5 meters.



What is the lateral surface area of the prism in square meters?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

35 The table shows the linear relationship between the number of hours Francis worked, , and the amount of money Francis earned, .

Francis's Earnings

Number of Hours Worked	1.25	3.75	5.5
Amount Earned	$17.50	$52.50	$77.00

Based on the table, how much did Francis earn per hour?

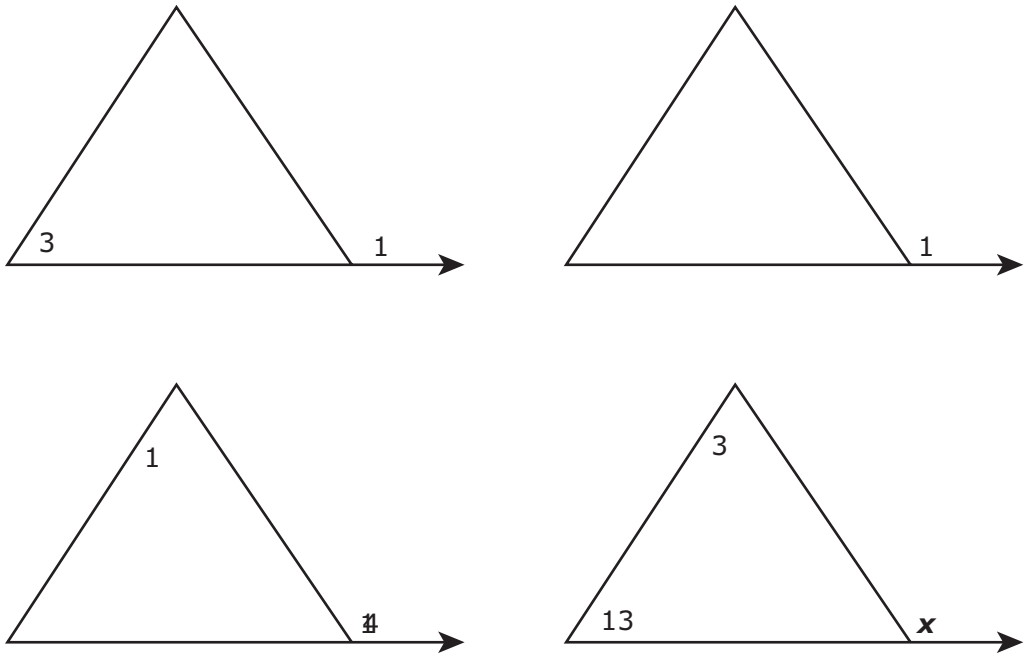
A $17.50 per hour

B $14.00 per hour

C $35.00 per hour

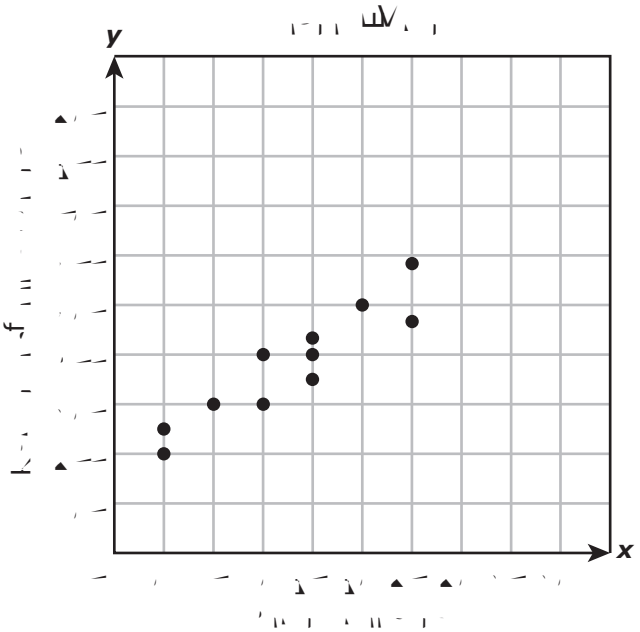
D $24.50 per hour

36 Four triangles are shown. One side of each triangle lies on a ray, and the triangles are not drawn to scale.



Based on these triangles, [illegible]

37 The scatterplot shows the time spent playing a video game and the number of points scored by several students.



Based on the scatterplot, which is the best prediction of the number of points scored by a student who spends 45 minutes playing the video game?

A 1,200

B 920

38 The length of a rectangular frame is 15 inches, and the width of the frame is 8 inches. What is the length of a diagonal of this frame in

39 Which set of ordered pairs represents as a function of ?

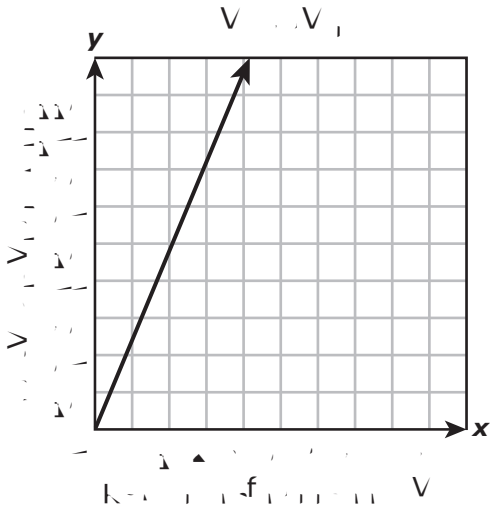
A $\{$ – – – – – –

– –

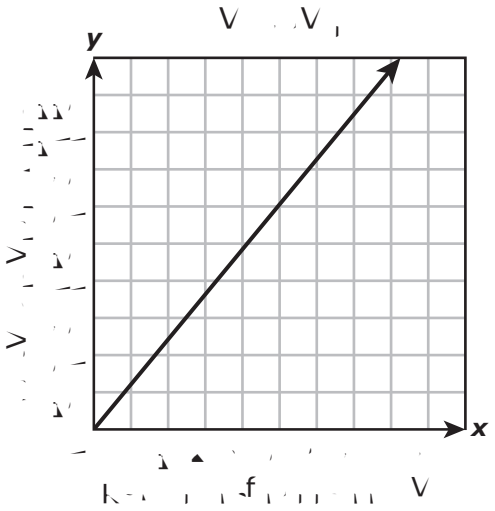
– – – – – – – –

41 On a map scale, 2 inches represents 60 miles. Which graph best shows the relationship between , the number of inches on the map, and , the actual distance in miles?

A



C



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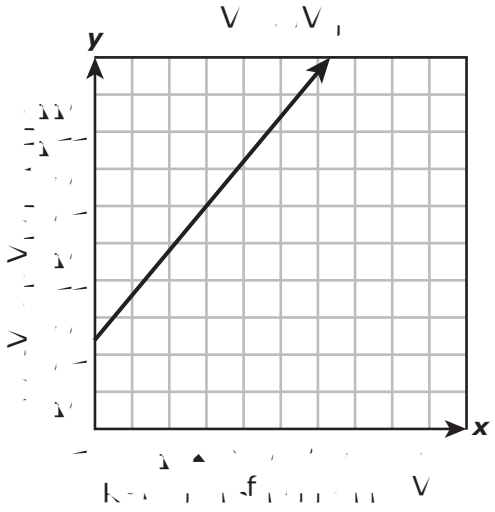

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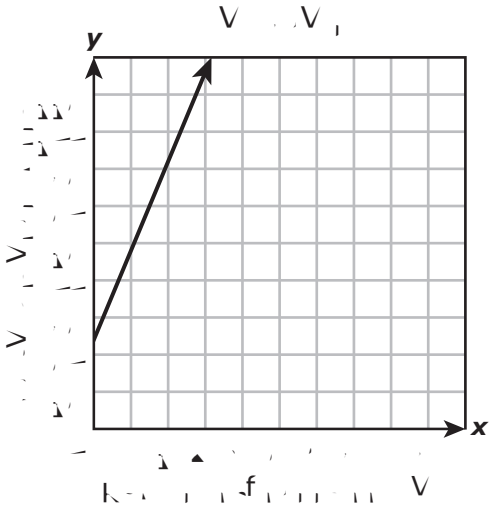

42 Quadrilateral was translated 5 units to the right and 3 units up to create quadrilateral ′ ′ ′ ′. Which rule describes this transformation?

F (,) → (− 5, − 3)

G (,) → (+ 5, + 3)

H (,) → (− 3, − 5)

J (,) → (+ 3, + 5)

STOP