Student Name _____

Teacher Name _____

School _____

System _____

Tennessee Comprehensive Assessment Program

Achievement Test ~ Grade 8

Item Sampler

Mathematics

Reporting Category: **1 Mathematical Processes**

Performance Indicator: **0806.1.1 Solve problems involving rate/time/distance (i.e., d = rt).**

1 A train traveled for $\frac{3}{4}$ hour at a speed of 80 miles per hour. It then immediately slowed to 60 miles per hour and traveled at that speed for the next $\frac{1}{4}$ hour. What is the total distance the train traveled during this hour?

A 65 miles

B 70 miles

C 75 miles

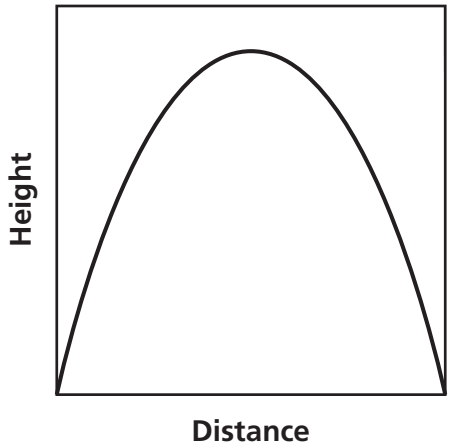
D 90 miles

Go On ▶

Reporting Category: **1 Mathematical Processes**

Performance Indicator: **0806.1.2 Interpret a qualitative graph representing a contextual situation.**

2 William shot an arrow into the air. The graph below shows the height and distance the arrow traveled during flight.



Based on the graph, which statement about the flight of the arrow is true?

F The height of the arrow decreased and then increased.

G The height of the arrow increased and then remained constant.

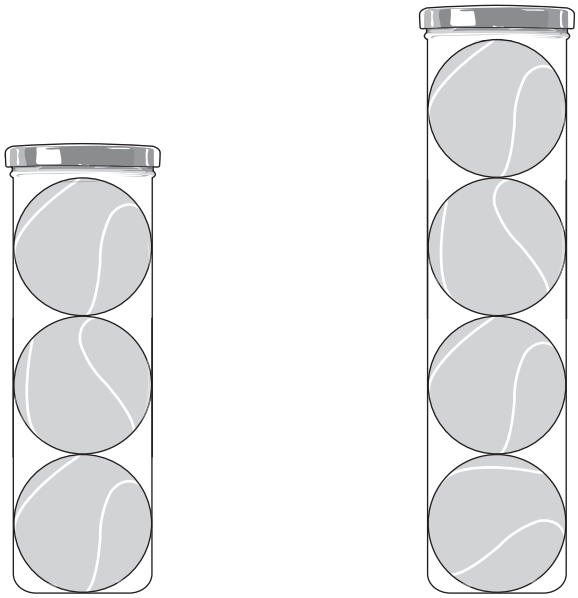
H The height of the arrow increased and then decreased.

J The height of the arrow decreased and then remained constant.

Reporting Category: **1 Mathematical Processes**

Performance Indicator: **0806.1.3 Calculates rates involving cost per unit to determine the best buy.**

3 Coach Smith went to a store to buy tennis balls. The following packages of tennis balls are available at this store.



3 tennis balls
$4.95

4 tennis balls
$6.00

Coach Smith needs to buy 24 tennis balls. How much money will she save by purchasing 24 tennis balls in packages with the lowest unit price compared to the highest unit price?

A $1.05

B $1.50

C $3.15

D $3.60

Go On ▶

Reporting Category: **2 Number and Operations**

Performance Indicator: **0806.2.1 Order and compare rational and irrational numbers and locate on the number line.**

4 Which real number is closest in value to the number represented by Point *P* on the number line?

F $\sqrt{18}$

G $\sqrt{24}$

H $\frac{23}{5}$

J 4.5999

Reporting Category: **2 Number and Operations**

Performance Indicator: **0806.2.2 Identify numbers and square roots as rational or irrational.**

5 Which number is irrational?

A 2.001678

B 1.02002000200002 . . .

C 0.245245245 . . .

D 0.2

Reporting Category:	**2 Number and Operations**
Performance Indicator:	**0806.2.3 Use scientific notation to compute products and quotients.**

6 **Simplify:**

$$(3 \times 10^6)(2.5 \times 10^7)$$

F 5.5×10^{13}

G 7.5×10^{13}

H 5.5×10^{42}

J 7.5×10^{42}

Go On ▶

Reporting Category: **2 Number and Operations**

Performance Indicator: **0806.2.4 Solve real-world problems requiring scientific notation.**

7 The table below shows the number of ten-dollar bills produced at the Bureau of Engraving and Printing in 2006 and 2007.

Ten-Dollar Bills Produced

Year	Number
2006	8.512×10^8
2007	8.32×10^7

How many more ten-dollar bills were produced in 2006 than in 2007?

A 1.92×10^6

B 1.92×10^7

C 7.68×10^7

D 7.68×10^8

Reporting Category: **3 Algebra**

Performance Indicator: **0806.3.1 Find solutions to systems of two linear equations in two variables.**

8 What is the solution to this system of linear equations?

$$\begin{aligned} 3x + y &= 2 \\ x - 2y &= 10 \end{aligned}$$

F $(2, -4)$

G $(-4, 2)$

H $(3, -7)$

J $(-7, 3)$

Reporting Category: **3 Algebra**

Performance Indicator: **0806.3.2 Solve the linear equation $f(x) = g(x)$.**

9 **Given:** $\begin{cases} f(x) = \dfrac{x}{2} \\ g(x) = \dfrac{4x - 1}{5} \end{cases}$

If $f(x) = g(x)$, what is the value of x?

A $-\frac{2}{3}$

B $-\frac{1}{3}$

C $\frac{1}{3}$

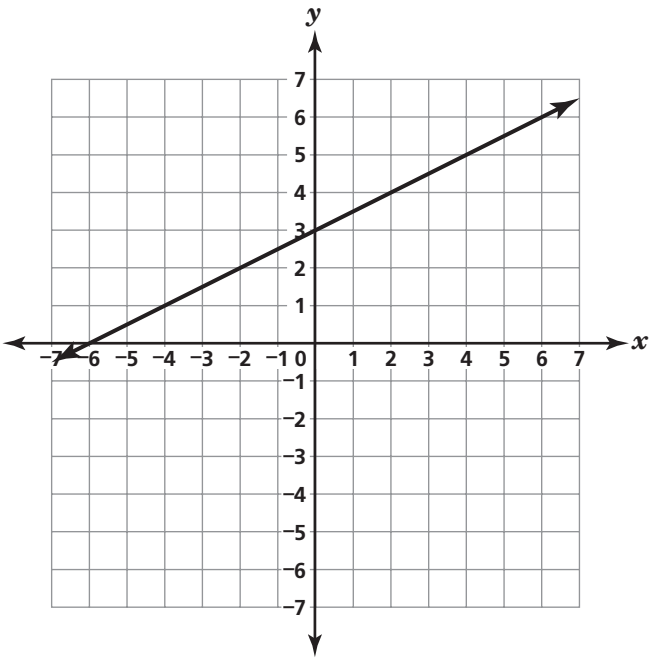
D $\frac{2}{3}$

Go On ▶

Reporting Category: **3 Algebra**

Performance Indicator: **0806.3.4 Translate between various representations of a linear function.**

10 The graph of a linear function is shown below.



Which linear equation is best represented by this graph?

F $y = 3$

G $y = \frac{1}{2}x$

H $y = \frac{1}{2}x + 3$

J $y = 3x + \frac{1}{2}$

Reporting Category: **3 Algebra**

Performance Indicator: **0806.3.5 Determine the slope of a line from an equation, two given points, a table or a graph.**

11 Points (15, 31) and (27, 35) are both located on $\overleftrightarrow{RS}$. What is the slope of $\overleftrightarrow{RS}$?

A $\frac{1}{2}$

B $\frac{1}{3}$

C 2

D 3

Reporting Category: **3 Algebra**

Performance Indicator: **0806.3.5 Determine the slope of a line from an equation, two given points, a table or a graph.**

12 What is the slope of the line represented by the equation $y = 5x + 2$?

F $\frac{1}{5}$

G $\frac{2}{5}$

H 2

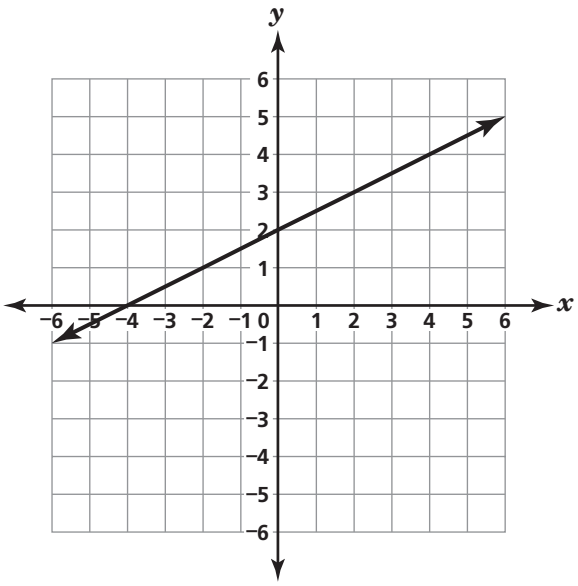
J 5

Go On ▶

Reporting Category: **3 Algebra**

Performance Indicator: **0806.3.6 Analyze the graph of a linear function to find solutions and intercepts.**

13 A line is graphed below.



Which is closest to the *y*-value of the *y*-intercept of this line?

A 2

B $\frac{1}{2}$

C 0

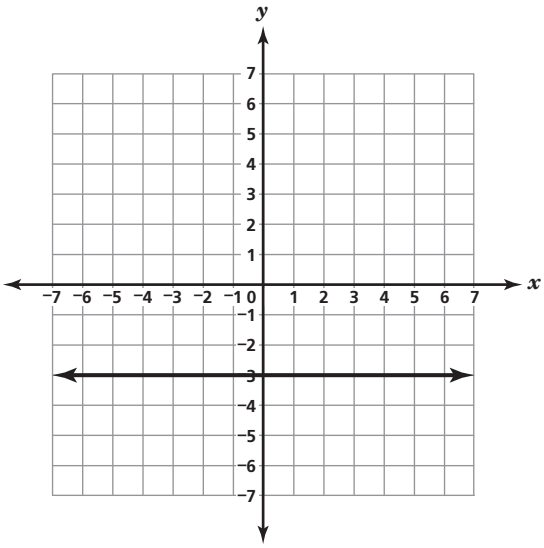
D −4

Reporting Category: 3 Algebra

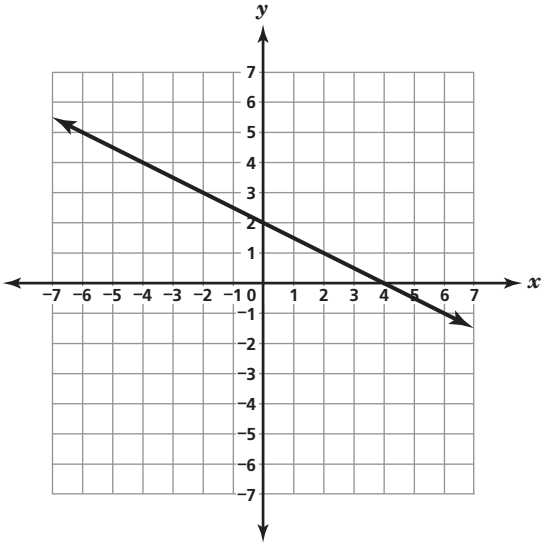
Performance Indicator: 0806.3.6 Analyze the graph of a linear function to find solutions and intercepts.

14 Which graph shows a line that appears to have a *y*-intercept with a *y*-value of 0?

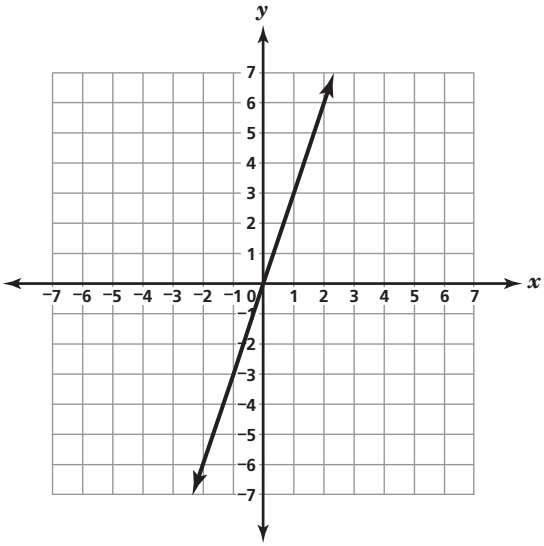
F



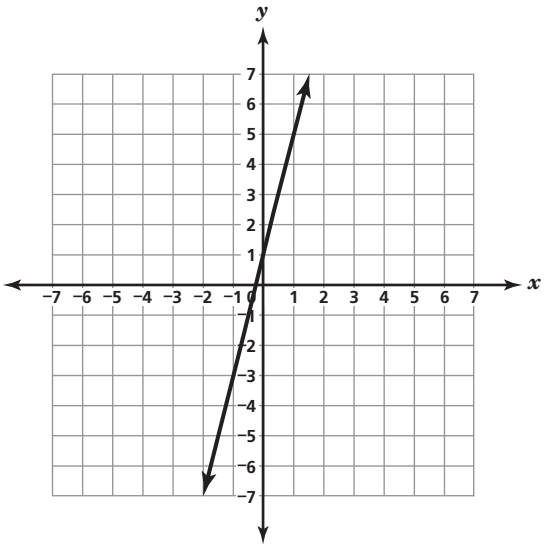
H



G



J



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Reporting Category:	**3 Algebra**
Performance Indicator:	**0806.3.7 Identify, compare and contrast functions as linear or nonlinear.**

15 Which equation represents a linear function?

A $y = x^2 - 2$

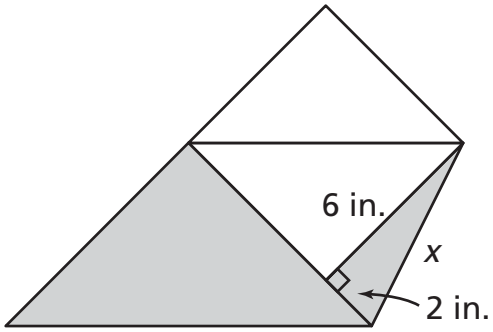
B $3x + y = 7$

C $5 - x^4 = y + x^5$

D $y = 2x^3 + x^2 - 5x + 1$

Reporting Category:	**4 Geometry and Measurement**
Performance Indicator:	**0806.4.1 Use the Pythagorean Theorem to solve contextual problems.**

16 A teacher is showing her class how to fold a square piece of paper to create a paper cup. One of the steps is shown below.



According to the measurements, what is the length of x, in inches?

F 4

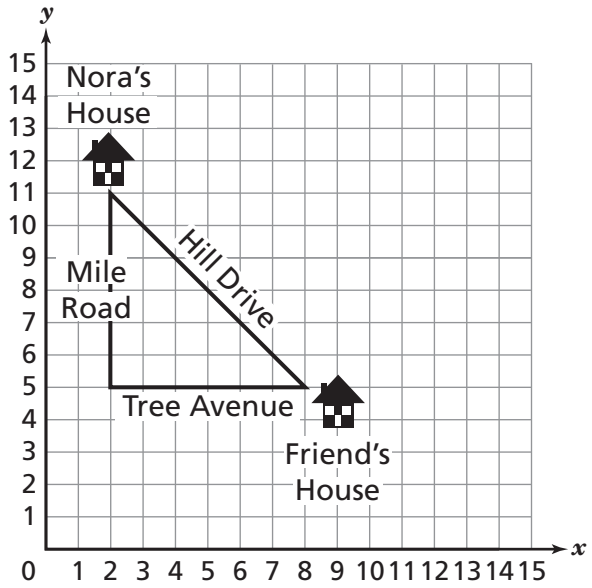
G $\sqrt{32}$

H $\sqrt{40}$

J 8

Reporting Category:	**4 Geometry and Measurement**
Performance Indicator:	**0806.4.2 Apply the Pythagorean theorem to find distances between points in the coordinate plane to measure lengths and analyze polygons and polyhedra.**

17 The grid below shows a diagram of two paths from Nora's house to her friend's house.



Based on the diagram, which is the closest distance from Nora's house to her friend's house on Hill Drive?

A 8 units

B 12 units

C 18 units

D 36 units

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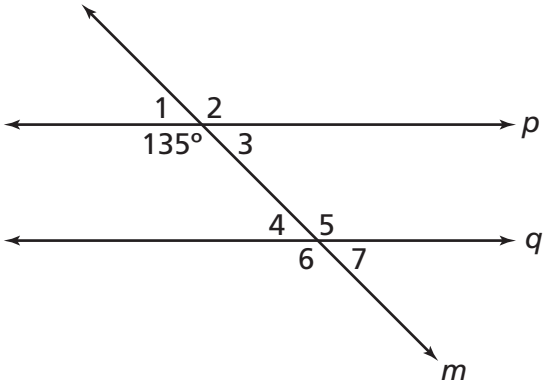
Reporting Category: **4 Geometry and Measurement**

Performance Indicator: **0806.4.3 Find measures of the angles formed by parallel lines cut by a transversal.**

18 In this figure, Lines *p* and *q* are parallel and Line *m* is a transversal.



What is the measure of ∠7?

F 45°

G 55°

H 135°

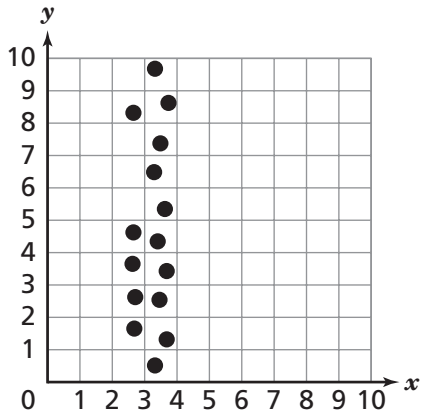
J 225°

Reporting Category: **5 Data Analysis, Statistics and Probability**

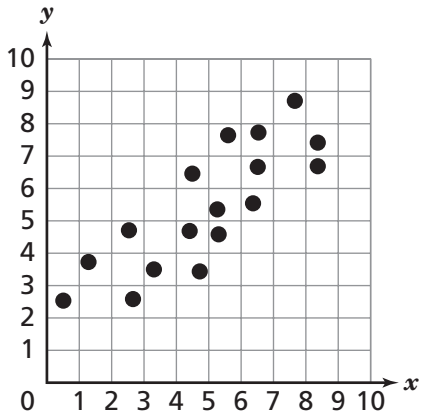
Performance Indicator: **0806.5.3 Generalize the relationship between two sets of data using scatterplots and lines of best fit.**

19 Which scatterplot displays a negative relationship between the two variables?

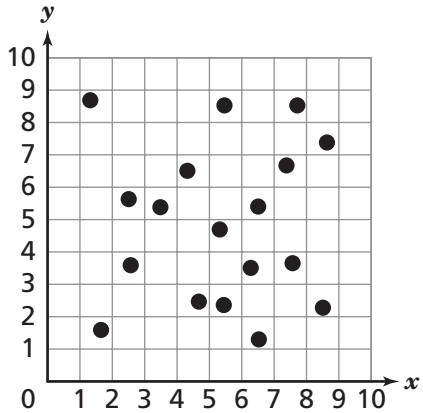
A



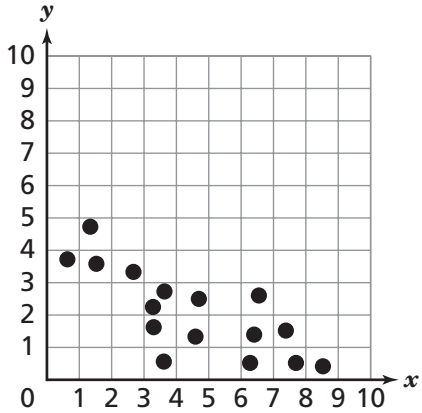
C



B



D



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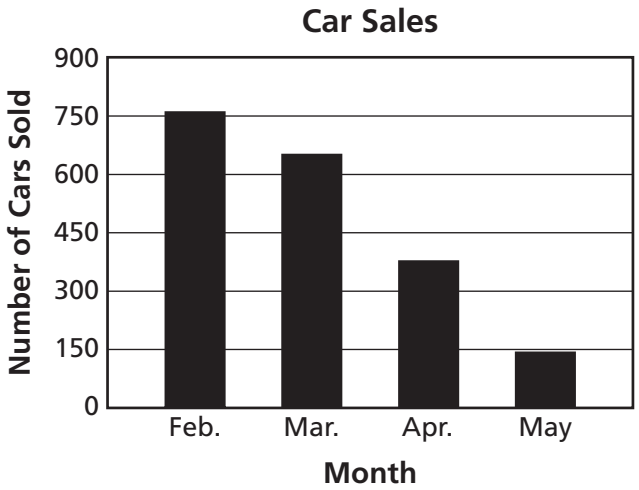
Reporting Category: **5 Data Analysis, Statistics and Probability**

Performance Indicator: **0806.5.4 Recognize misrepresentations of published data in the media.**

20 The decrease in sales for a car dealership over four months is shown on the graph.



The dealership manager wants to make the decrease seem less significant. Which change to the graph would be most effective?

F use a greater vertical interval on the vertical axis

G only show the sales from the first and fourth months

H represent the data in a line graph instead of a bar graph

J compare the data to the previous year's sales using a bar graph

STOP

Math
Answer Key

1	C
2	H
3	D
4	G
5	B

6	G
7	D
8	F
9	D
10	H

11	B
12	J
13	A
14	G
15	B

16	H
17	A
18	F
19	D
20	F