Tennessee Comprehensive Assessment Program

TCAP

Math

Grade 8 | Practice Test

Please* PRINT *all information in the box.

Student Name: _____

Teacher Name: _____

School: _____

District: _____

All practice test items represent the appropriate grade level/content standards—however, the practice test may contain item types that no longer appear on the operational assessment.

TCAP Math Reference Sheet—Grade 8

1 yard = 3 feet	1 cup = 8 fluid ounces
1 mile = 1,760 yards	1 pint = 2 cups
1 mile = 5,280 feet	1 quart = 2 pints
1 kilometer = 1,000 m	1 gallon = 4 quarts
	1 liter = 1,000 cubic centimeters
1 pound = 16 ounces	Area of a Regular Polygon= $\frac{1}{2}ap$
1 ton = 2,000 pounds	where a is the apothem length and p is perimeter
1 kilogram = 1,000 grams	

No test material on this page

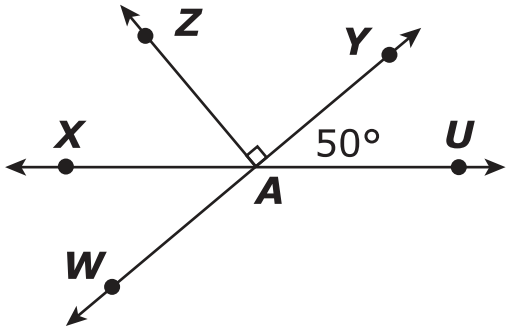
Directions

This test has Subpart 1, Subpart 2, and Subpart 3. Each subpart contains various types of assessment questions. The following sample shows a type of question used.

You MAY NOT use a calculator in Subpart 1 of this test.

Sample: Multiple select (multiple correct responses)

Lines *XU* and *WY* intersect at point *A*.



Based on the diagram, select **all** statements that must be true.

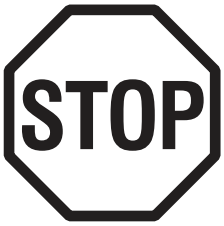
A. $\angle XAZ$ measures 50°.

B. $\angle XAW$ measures 50°.

C. $\angle WAU$ and $\angle XAY$ are vertical angles.

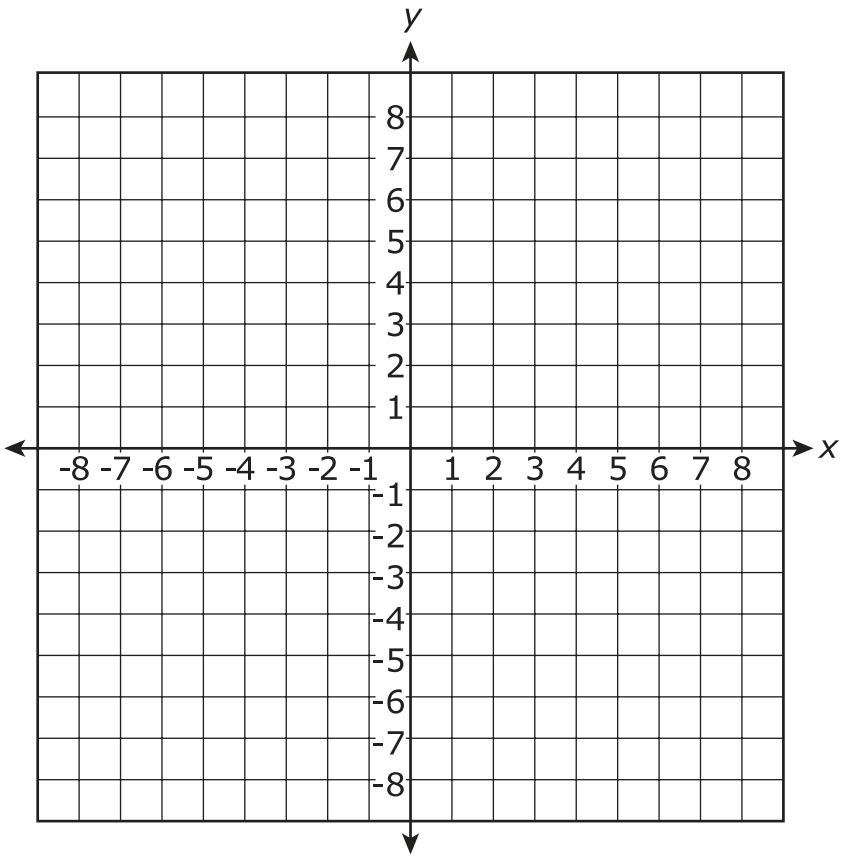
D. $\angle ZAX$ and $\angle YAU$ are complementary angles.

E. $\angle WAZ$ and $\angle ZAU$ are supplementary angles.



Do not go on to the next page until told to do so.

1 On the coordinate plane shown, plot **five** points that represent a function.



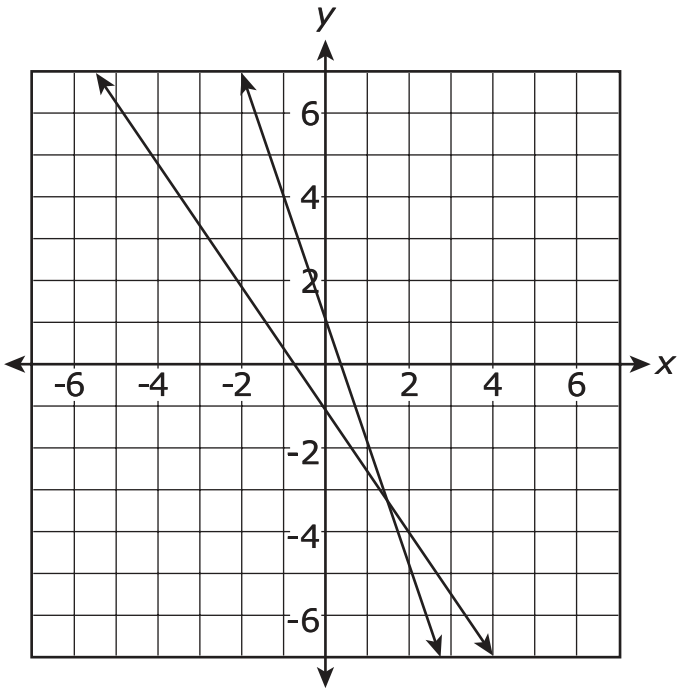
2 A baby weighs 7 pounds at birth. The table shows the baby's weight after each month of its birth, up to the sixth month.

Month	Weight (pounds)
0	7
1	8
2	9
3	10
4	11
5	12
6	13

Write an equation in the form of $y = mx + b$ that can be used to show a linear relationship among the data.

Enter your answer in the space provided.

3 The system of linear equations shown is graphed on the coordinate plane.



What is the approximate solution for the system of linear equations?

A. (1, −3)

B. (−3, 1.3)

C. (1.3, −3)

D. (−3, 1)

4 Given the expression $\frac{(2^{-3})(2^{5})}{(2^{7})}$, select the **three** equivalent numerical expressions.

M. $(2^{-3+5})(2^{-7})$

P. $\frac{2^{5}}{2^{3-7}}$

R. $\frac{2^{5}}{2^{10}}$

S. $\frac{1}{32}$

T. 32

5 What value of coefficient b makes the equation true for any real number x?

$$-3(2x - 3) + 5x = bx + 9$$

A. 11

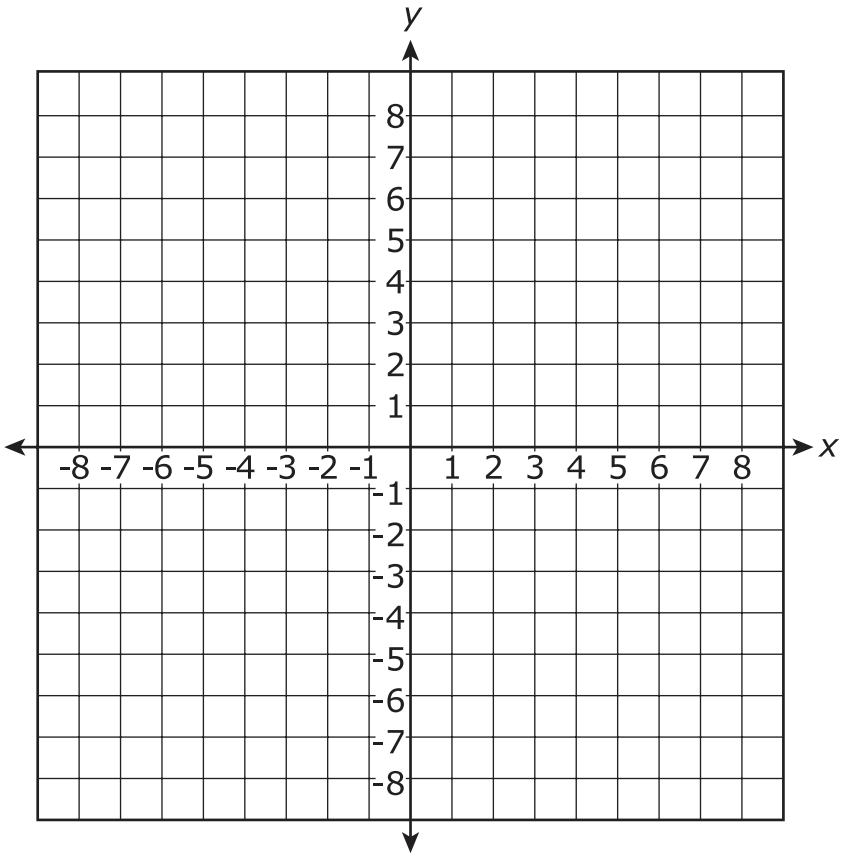
B. 7

C. -1

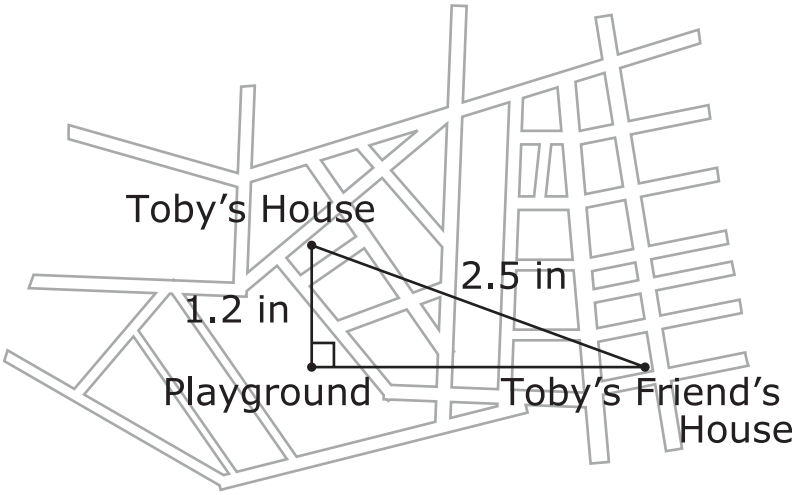
D. -6

6 A triangle has vertices $R(1, 2)$, $S(3, 3)$, and $T(-3, 4)$. The triangle will be reflected over the x-axis.

On the coordinate plane shown, create triangle $R'S'T'$, the image of triangle RST.



7 Toby has created a map of his neighborhood. When he drew the map he noticed his house, his friend's house, and the playground formed a right triangle.



Which expression represents the distance, in inches, between Toby's friend's house and the playground?

M. $\sqrt{2.5-1.2}$

P. $\sqrt{2.5^2-1.2^2}$

R. $\sqrt{2.5+1.2}$

S. $\sqrt{2.5^2+1.2^2}$

8 The value of an irrational number expression is estimated to be between 18 and 19. Which could be the expression?

A. $(\sqrt{2})^9$

B. $(\sqrt{3})^5$

C. $(\sqrt{6})^3$

D. $(\sqrt{7})^3$

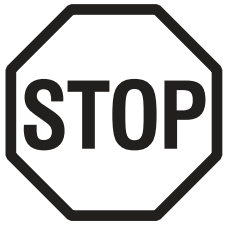
9 What is the value of b for $b^2 = \frac{36}{64}$?

M. $b = \frac{18}{32}$

P. $b = \frac{9}{16}$

R. $b = \frac{6}{8}$

S. $b = \frac{72}{128}$



This is the end of Subpart 1 of the Math Practice Test.
Do not go on to the next page until told to do so.

No test material on this page

Directions

Subpart 2 of this test contains various types of assessment questions. The following sample shows a type of question used.

You MAY use a calculator in Subpart 2 of this test.

Sample: Written response (fill in the blank)

This table contains equivalent ratios between x and y.

x	y
3	18
5	30
?	48
15	90

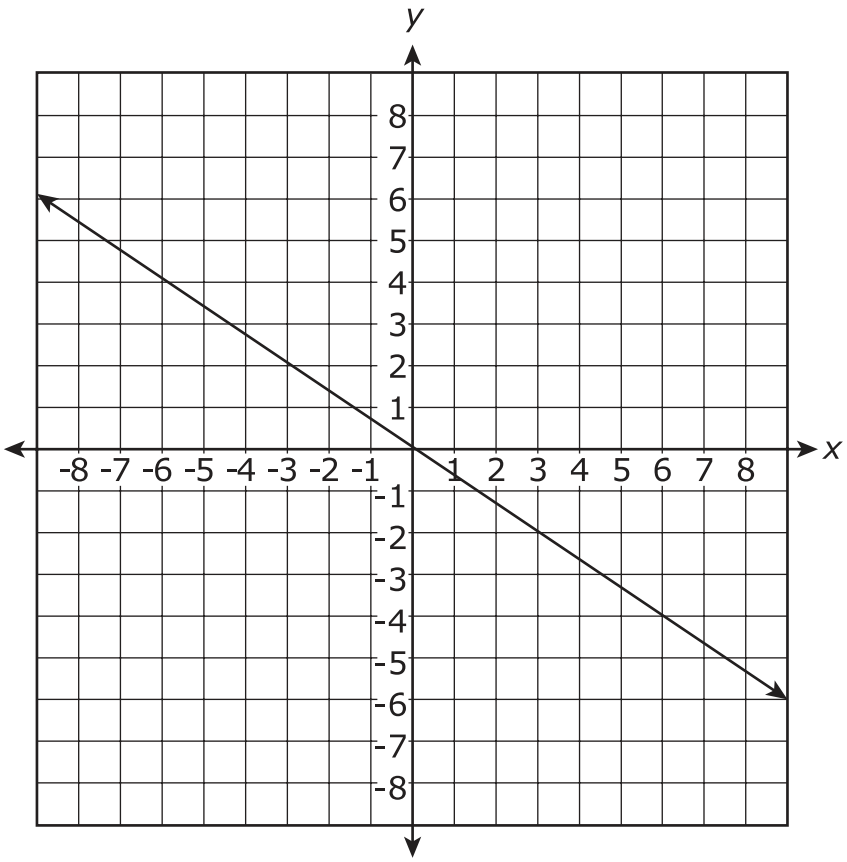
What is the missing value of x in the table?

Enter your answer in the space provided.

Do not go on to the next page until told to do so.

No test material on this page

10 The graph displays a linear function.



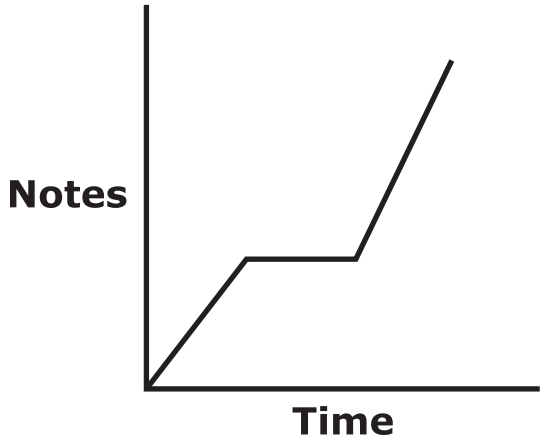
Write the equation of the linear function in the form $y = mx + b$.

Enter your equation in the space provided.

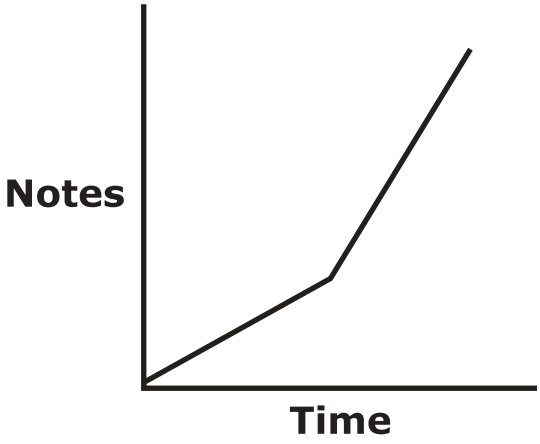
11 Kari plays a certain number of notes in a set amount of time on the piano. She rests for a period of time, then plays fewer notes in the same amount of time it took her to play the first set of notes.

Which graph can be used to represent the situation?

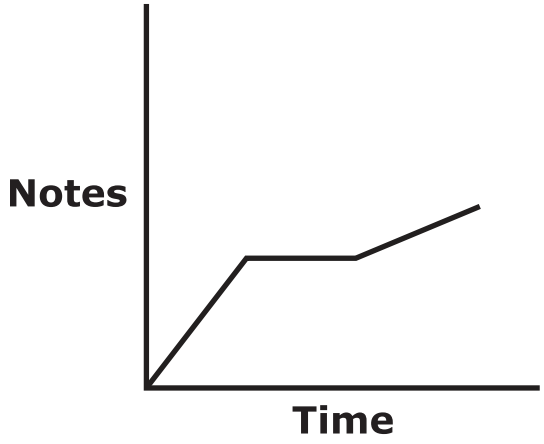
A.



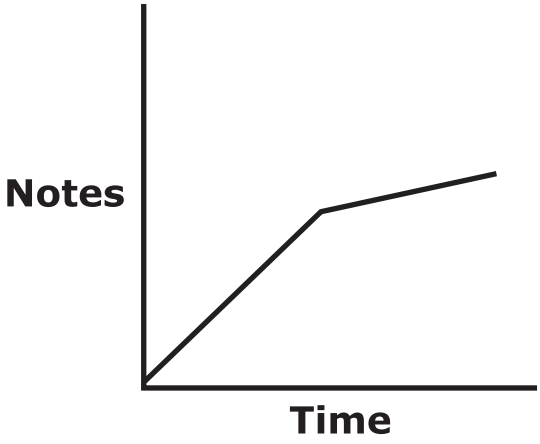
C.



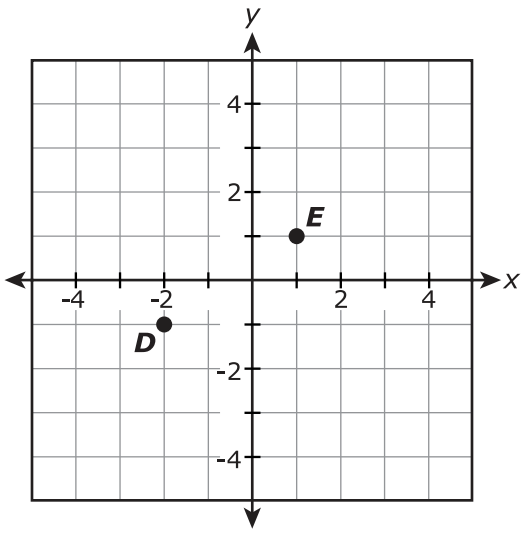
B.



D.



12 Points *D* and *E* are graphed on the coordinate plane.



What is the distance, in units, between point *D* and point *E*?

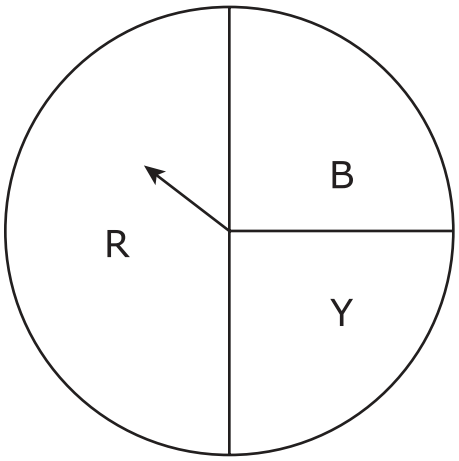
M. $\sqrt{5}$ units

P. 3 units

R. $\sqrt{13}$ units

S. 5 units

13 In the spinner shown, the probability of spinning red (R) is $\frac{1}{2}$, and the probability of spinning either blue (B) or yellow (Y) is $\frac{1}{4}$.



The spinner will be spun twice.

What is the probability that the result of the first spin will be red and the second spin will be blue?

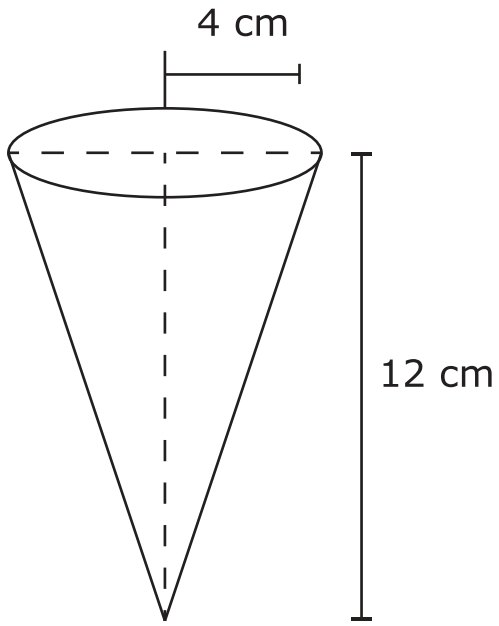
A. $\frac{5}{16}$

B. $\frac{1}{8}$

C. $\frac{1}{4}$

D. $\frac{3}{4}$

14 An ice cream cone is 12 centimeters tall and has a radius of 4 centimeters.



Which measure is closest to the volume, in cubic centimeters, of the ice cream cone?

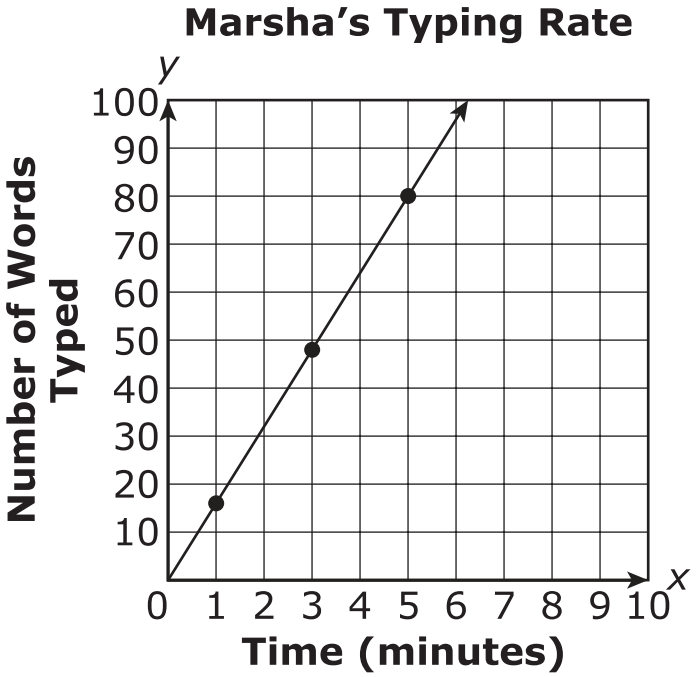
M. 50.3

P. 201.1

R. 603.2

S. 804.2

15 The typing rate for Marsha is shown in the graph. The typing rate for Clay is shown in the table.



Clay's Typing Rate

Time (minutes)	Number of Words Typed
3	54
5	90
7	126

Based on this information, which statement is true?

A. Clay types at a rate of 16 words per minute, which is faster than Marsha.

B. Marsha types at a rate of 16 words per minute, which is faster than Clay.

C. Clay types 2 more words per minute than Marsha.

D. Marsha types 2 more words per minute than Clay.

16 What is the volume, in cubic inches, of a sphere with an 18-inch diameter?

Enter your answer in the space provided.

17 For $1200, a business can post an advertisement for 30 days. For $1500, the advertisement will be posted for 60 days. The relationship comparing cost to days is linear. Which function can be used to model the relationship between cost, y, and the number of days, x, that an advertisement will be posted?

M. $y = 300x + 1200$

P. $y = 1200x + 300$

R. $y = 10x + 900$

S. $y = 900x + 10$

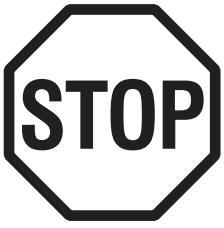
18 Which equation represents a linear function?

A. $y = x(2 - 3x)$

B. $y = \frac{1}{2}(x - 3) - 2x$

C. $y = \frac{1}{2}x^2 + 3x - 1$

D. $y = \frac{1}{2}x(2x - 1) + 3$



This is the end of Subpart 2 of the Math Practice Test.
Do not go on to the next page until told to do so.

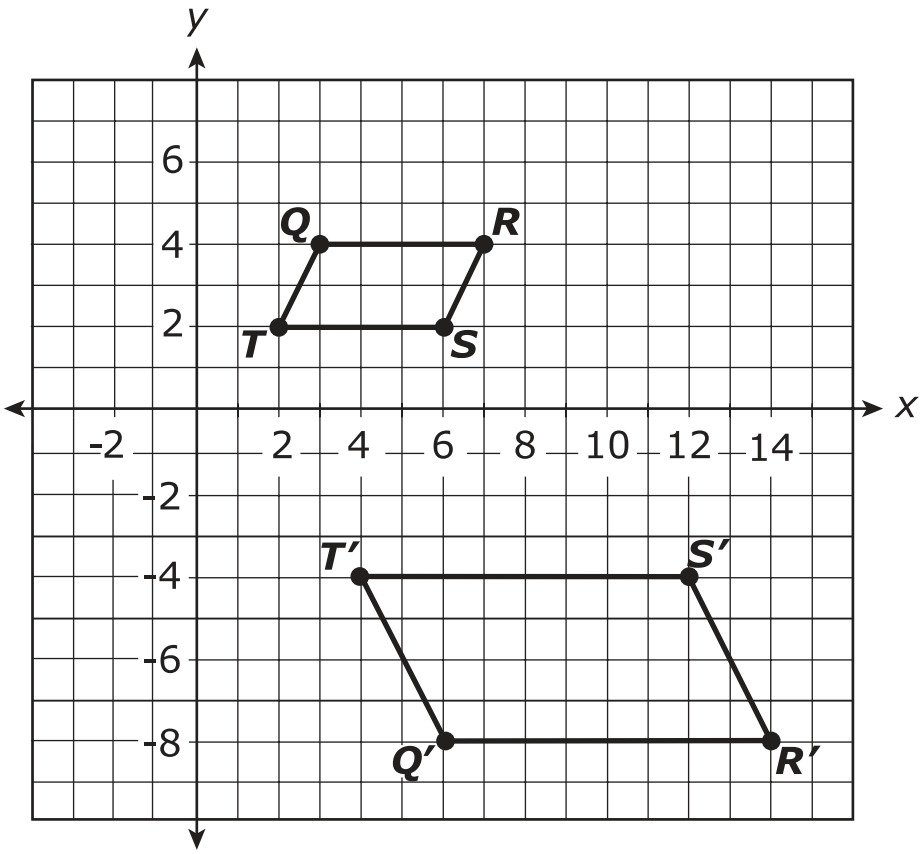
Directions

Subpart 3 of this test contains various types of assessment questions.

You MAY use a calculator in Subpart 3 of this test.

No test material on this page

19 Quadrilateral *QRST* and its image, *Q′R′S′T′*, are shown.



What is the sequence of transformations that results in quadrilateral *QRST* being mapped onto quadrilateral *Q′R′S′T′*?

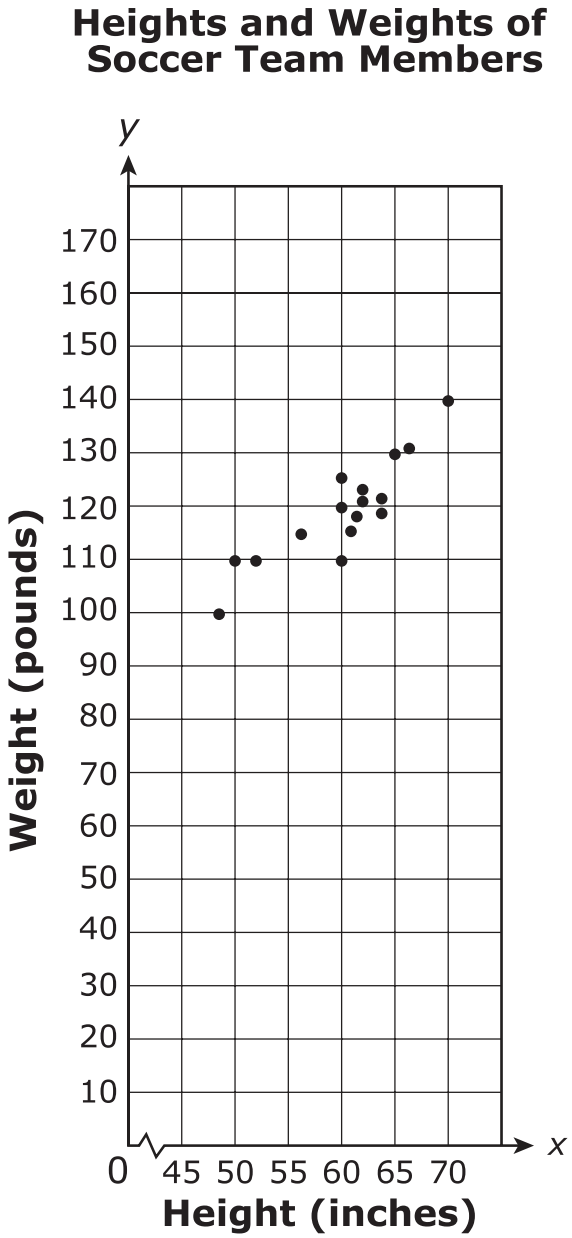
A. reflection over the *x*-axis, followed by a dilation about the origin by a scale factor of 2

B. 90° clockwise rotation about the origin, followed by a dilation about the origin by a scale factor of 2

C. dilation about the origin by a scale factor of 2, followed by a translation 2 units right and then 2 units down

D. 270° counterclockwise rotation about the origin, followed by a dilation about the origin by a scale factor of 2

20 Raul recorded the height, in inches, and weight, in pounds, of each of his soccer team members. Then he graphed the data in the scatter plot shown.



Which **three** statements about the scatter plot of the data are true?

M. The data have a linear association.

P. The data have a positive association.

R. The data have a negative association.

S. As the height increases, so does the weight.

T. The data are clustered about the height of 55 inches.

21 Becky and Luke bought the same kind of pencils and erasers. Becky spent $1.45 for 2 pencils and 3 erasers. Luke spent $2.65 for 5 pencils and 1 eraser.

What is the cost of 1 eraser?

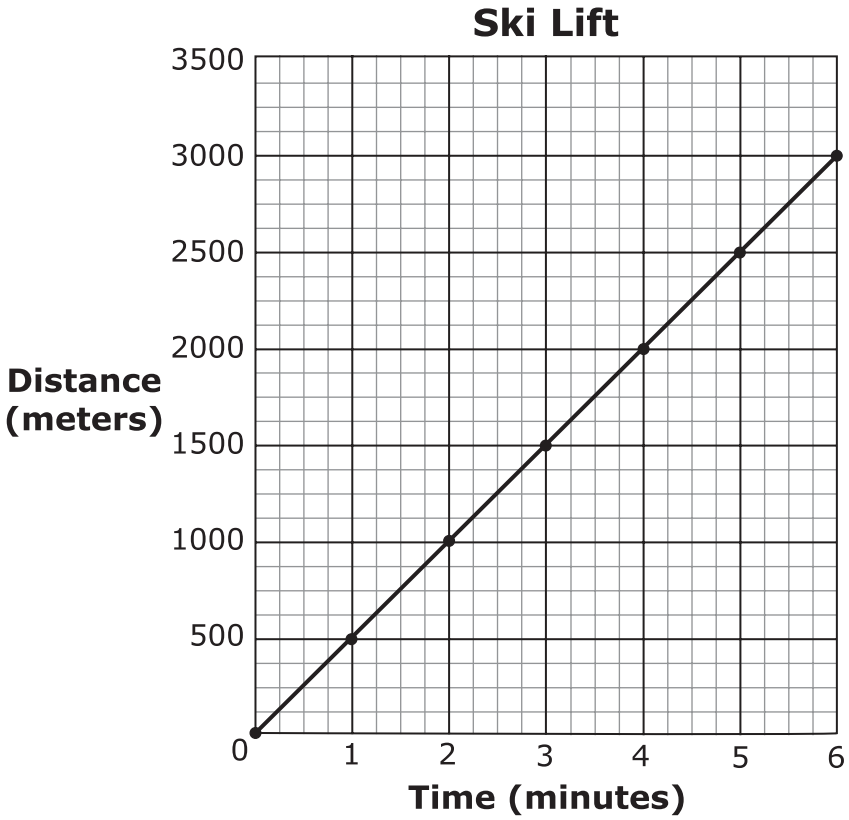
A. $0.60

B. $0.50

C. $0.22

D. $0.15

22 A ski lift is used to transport skiers to the top of a slope. A certain ski lift is 3000 meters long. The graph represents the relationship between the number of minutes in the ski lift, x, and the distance traveled, y.



What does the slope of the line mean in this context?

M. The ski lift travels 500 meters every minute.

P. The ski lift travels 1 meter every 500 minutes.

R. The rate of the ski lift increases every minute.

S. The rate of the ski lift decreases every minute.

23 Which sets of ordered pairs represent a function? Select **all** that apply.

A. (1,1), (1,2), (1,3), (1,4)

B. (1,1), (2,2), (3,3), (4,4)

C. (1,1), (2,1), (3,1), (4,1)

D. (1,4), (2,4), (1,3), (2,3)

E. (1,4), (2,2), (3,1), (4,3)

24 Which equation has infinitely many solutions?

M. $5x - 5 = 11x + 2 - 1$

P. $4x + 5 = -4x + 5$

R. $3x + 4 = 3 + 3x - 1$

S. $3x + 2 - 2x = x + 2$

25 The average distance from Earth to the moon is approximately 238,900 miles. What is this distance, in miles, written in scientific notation?

Enter your answer in the space provided.

26 A cell phone company charges $20 for a customer to open a new account and $35 for each month of phone service.

Write a linear function to represent the total cost, *y,* a new customer would pay for *x* months of service.

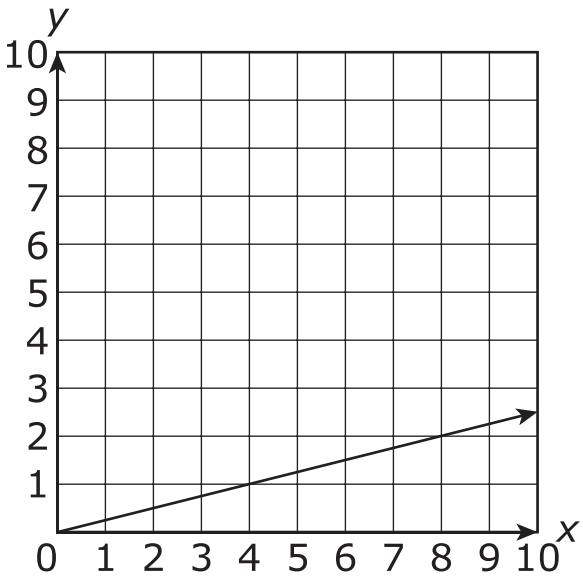
Enter your answer in the space provided.

27 The table represents a proportional relationship.

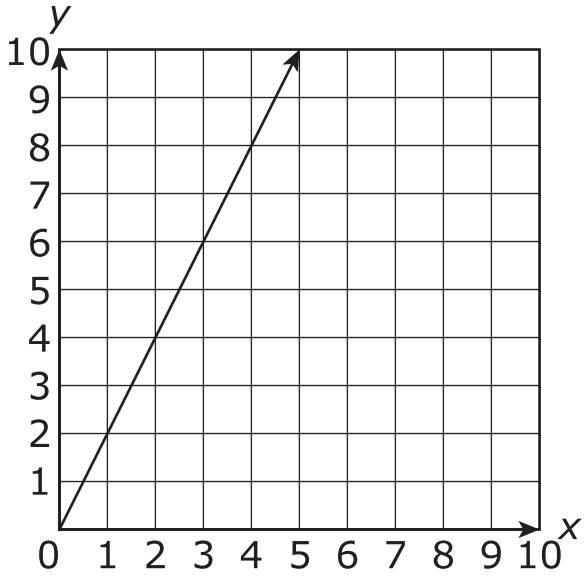
x	1	1.5	2	2.5
y	4	6	8	10

Which graph represents a proportional relationship with the same unit rate as the table?

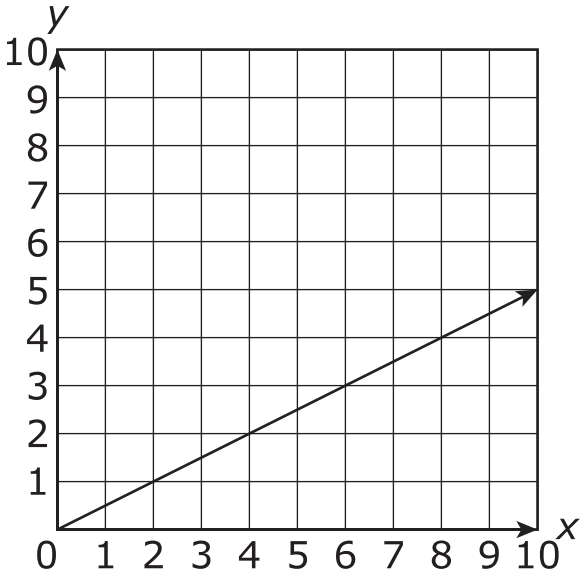
A.



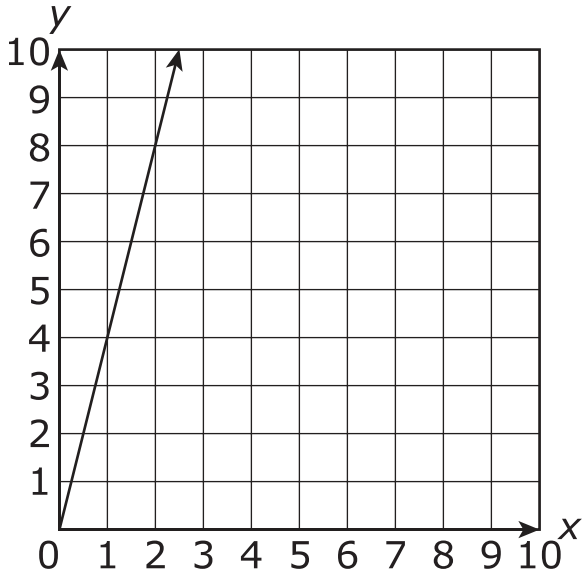
C.



B.

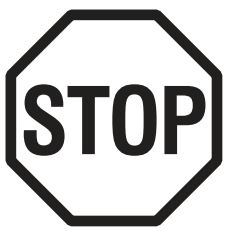


D.



28 A rectangle has a width of 28 centimeters and a length of 45 centimeters. What is the length, in centimeters, of its diagonal?

Enter your answer in the space provided.



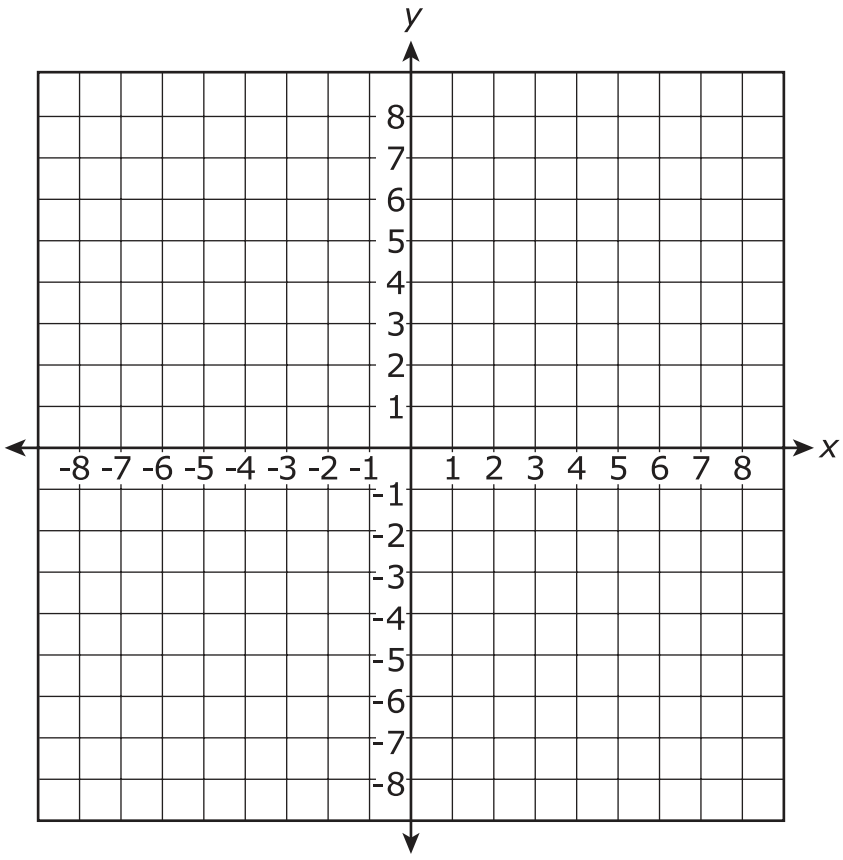
This is the end of the test.

No test material on this page

Name: _____

Subpart 1 Practice Test Questions

1.



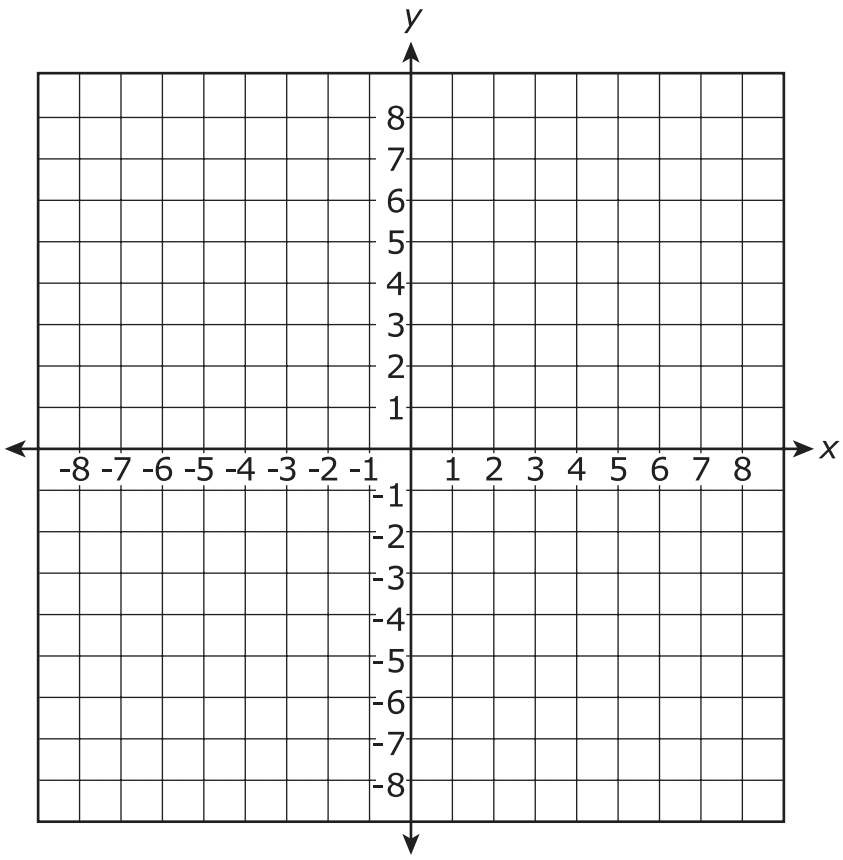
2.

3. Ⓐ Ⓑ Ⓒ Ⓓ

4. Ⓜ Ⓟ Ⓡ Ⓢ Ⓣ (select **three**)

5. Ⓐ Ⓑ Ⓒ Ⓓ

6.



7. Ⓜ Ⓟ Ⓡ Ⓢ

8. Ⓐ Ⓑ Ⓒ Ⓓ

9. Ⓜ Ⓟ Ⓡ Ⓢ

Subpart 2 Practice Test Questions

10.

11. Ⓐ Ⓑ Ⓒ Ⓓ

12. Ⓜ Ⓟ Ⓡ Ⓢ

13. Ⓐ Ⓑ Ⓒ Ⓓ

14. Ⓜ Ⓟ Ⓡ Ⓢ

15. Ⓐ Ⓑ Ⓒ Ⓓ

16.

17. Ⓜ Ⓟ Ⓡ Ⓢ

18. Ⓐ Ⓑ Ⓒ Ⓓ

Subpart 3 Practice Test Questions

19. Ⓐ Ⓑ Ⓒ Ⓓ

20. Ⓜ Ⓟ Ⓡ Ⓢ Ⓣ (select **three**)

21. Ⓐ Ⓑ Ⓒ Ⓓ

22. Ⓜ Ⓟ Ⓡ Ⓢ

23. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ (select **all**)

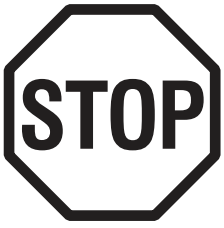
24. Ⓜ Ⓟ Ⓡ Ⓢ

25.

26.

27. Ⓐ Ⓑ Ⓒ Ⓓ

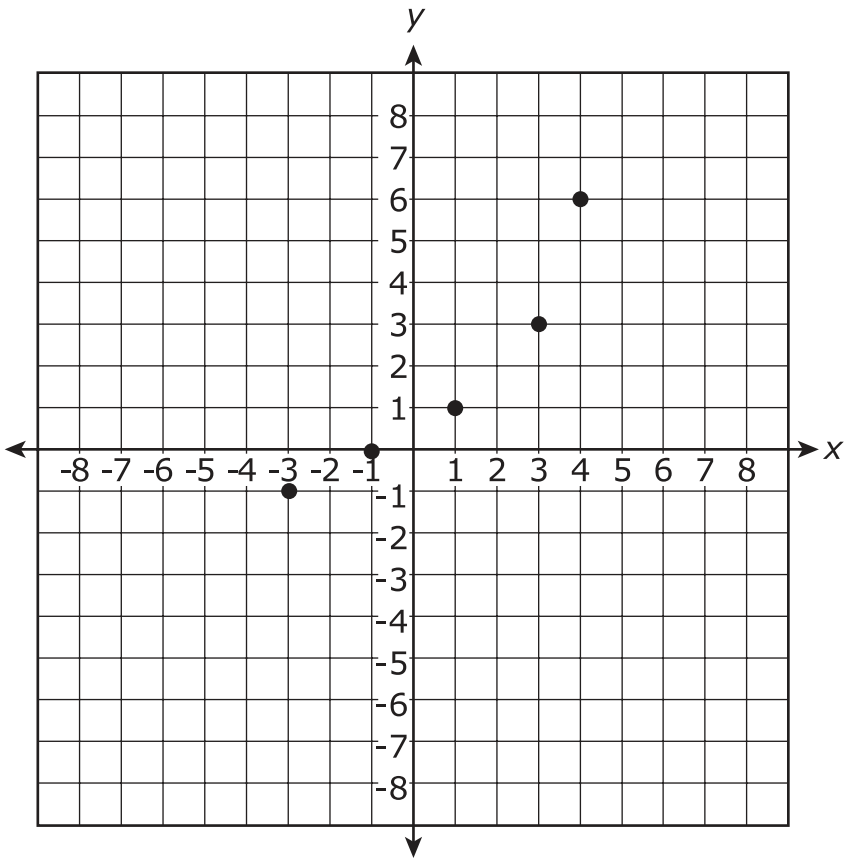
28.



Name: _____

Subpart 1 Practice Test Questions

1.



2.

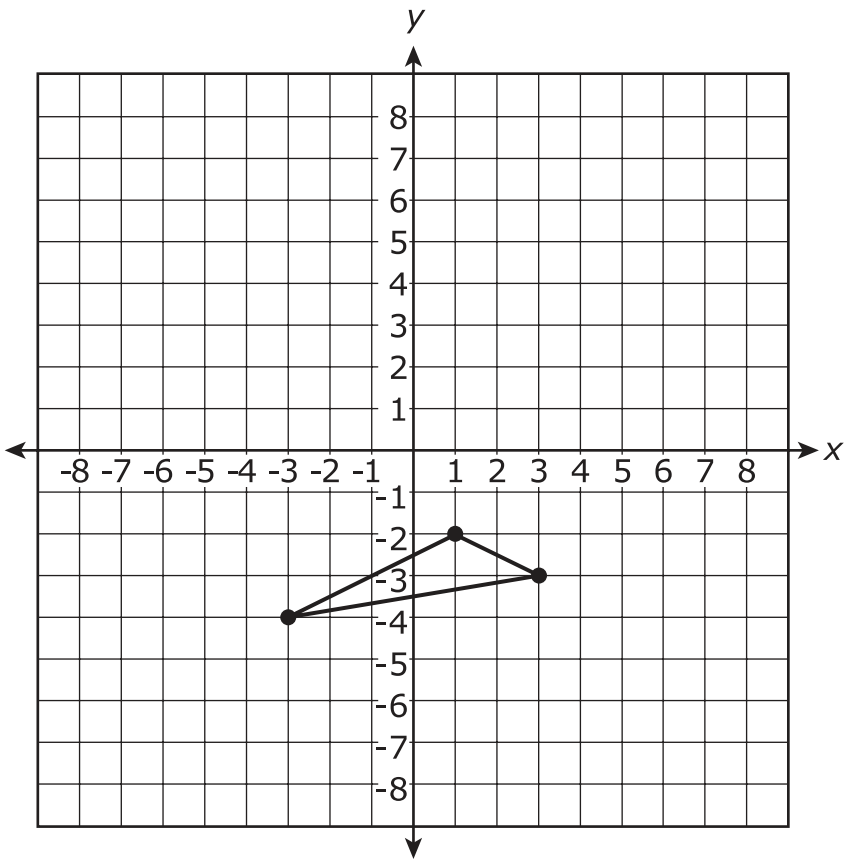
$y = x + 7$ or $y = 1x + 7$ (it is required to be in the form $y = mx + b$)

3. Ⓐ Ⓑ ● Ⓓ

4. ● Ⓟ ● ● Ⓣ (select **three**)

5. Ⓐ Ⓑ ● Ⓓ

6.



7. Ⓜ ● Ⓡ Ⓢ

8. Ⓐ Ⓑ Ⓒ ●

9. Ⓜ Ⓟ ● Ⓢ

Subpart 2 Practice Test Questions

10. $y = -\frac{2}{3}x$ or equivalent equation in the form $y = mx + b$

11. Ⓐ ● Ⓒ Ⓓ

12. Ⓜ Ⓟ ● Ⓢ

13. Ⓐ ● Ⓒ Ⓓ

14. Ⓜ ● Ⓡ Ⓢ

15. Ⓐ Ⓑ ● Ⓓ

16. Accept answers in the range 3052–3055, or 972π

17. Ⓜ Ⓟ ● Ⓢ

18. Ⓐ ● Ⓒ Ⓓ

Subpart 3 Practice Test Questions

19. ● Ⓑ Ⓒ Ⓓ

20. ● ● Ⓡ ● Ⓣ (select **three**)

21. Ⓐ Ⓑ Ⓒ ●

22. ● Ⓟ Ⓡ Ⓢ

23. Ⓐ ● ● Ⓓ ● (select **all**)

24. Ⓜ Ⓟ Ⓡ ●

25.

2.389×10^5

26.

$y = 35x + 20$ or equivalent equation

27. Ⓐ Ⓑ Ⓒ ●

28.

53

Department of Education

TCAP Practice Test Standards Alignment and Key – Grade 8

Subpart 1	Key	Standard
1	5 different points are plotted with no repeated x-coordinates	8.F.A.1
2	$y = x + 7$ or $y = 1x + 7$ (it is required to be in the form $y = mx + b$)	8.SP.A.3
3	C	8.EE.C.8b
4	M, R, S	8.EE.A.1
5	C	8.EE.C.7b
6	Triangle drawn with vertices at (1, -2), (3, -3), and (-3, -4)	8.G.A.2
7	P	8.G.B.5
8	D	8.NS.A.2
9	R	8.EE.A.2
Subpart 2		
10	$y = -\frac{2}{3}x$ or equivalent equation in the form $y = mx + b$	8.EE.B.6
11	B	8.F.B.5
12	R	8.G.B.6
13	B	8.SP.B.4
14	P	8.G.C.7
15	C	8.F.A.2
16	Accept answers in the range 3052–3055, or 972π	8.G.C.7
17	R	8.F.B.4
18	B	8.F.A.3
Subpart 3		
19	A	8.G.A.2
20	M, P, S	8.SP.A.1
21	D	8.EE.C.8c
22	M	8.EE.B.5
23	B, C, E	8.F.A.1
24	S	8.EE.C.7a
25	2.389×10^5	8.EE.A.4
26	$y = 35x + 20$ or equivalent equation	8.F.B.4
27	D	8.EE.B.5
28	53	8.G.B.5

No test material on this page

No test material on this page

No test material on this page

Tennessee Comprehensive Assessment Program TCAP
Math
Grade 8 | Practice Test