



New York State Testing Program

Grade 8

March 6–12, 2008 Mathematics Book 1 21004



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50 Minutes

TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Be sure to read carefully all the directions in the test book.
- You may use your tools to help you solve any problem on the test.
- Read each question carefully and think about the answer before choosing your response.

NO PROTRACTORS! NO PROTRACTORS! NO PROTRACTORS!



This picture means that you will use your ruler.

Sample A What is the shape of each base of a cylinder?
A circle B rectangle C triangle D square

Sample B What is the area, in square centimeters, of the rectangle shown below?

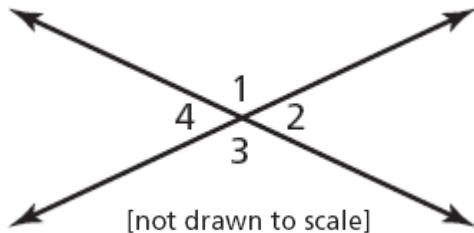
A 15 B 17 C 30 D 34

(the rectangle is not below, this question is in it. We are saving space, money, and trees)

STOP

1 In the diagram below, which pair of angles has the same measure?

- A $\angle 1$ and $\angle 2$
- B $\angle 1$ and $\angle 4$
- C $\angle 2$ and $\angle 3$
- D $\angle 2$ and $\angle 4$



2 Which situation is best represented by the expression $4h + 2$?

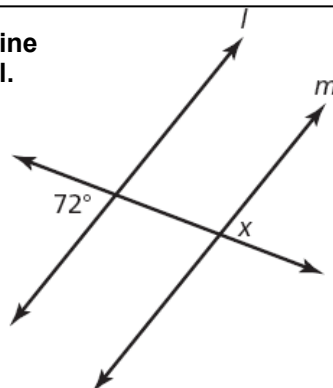
- A Kepa spends 4 hours babysitting and 2 hours traveling.
- B Kepa spends 4 hours babysitting and receives \$2 in travel expenses.
- C Kepa will be paid \$4 for babysitting and spends 2 hours traveling.
- D Kepa will be paid \$4 for every hour of babysitting plus \$2 for travel costs.

3 In the diagram below, line l and line m are parallel.

What is the measure of $\angle x$?

- A 18°
- B 72°
- C 108°
- D 162°

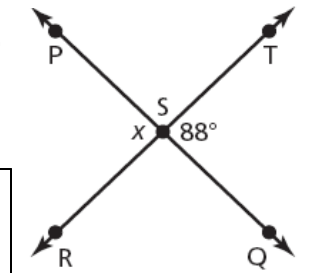
[not drawn to scale]



4 In the diagram below, \overleftrightarrow{PQ} intersects \overleftrightarrow{RT} at point S, and the measure of $\angle TSQ$ is 88° .

What is the measure, in degrees, of $\angle x$?

- A 88 B 92 C 178 D 268
- [not drawn to scale]



5 Simplify the expression below.

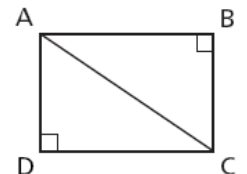
$$5x(2x - 5)$$

- A $10x - 5$ B $10x^2 - 5$ C $10x - 25x$ D $10x^2 - 25x$

6 Rectangle ABCD is formed by triangle ABC and triangle ACD, as shown below.

Which side of triangle ABC is the hypotenuse?

- A \overline{AB} C \overline{BC}
- B \overline{AC} D \overline{CD}



7 What is the simplified form of the expression below?

$$\frac{8x^6 - 6x^3}{2x^2}$$

- A $4x^3 - 3$ C $4x^3 - 3x$
- B $4x^4 - 3$ D $4x^4 - 3x$

8 Lamar claims that the weight, w , of her cat is at most 11 pounds. What inequality represents her claim?

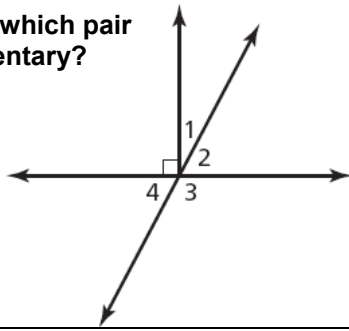
- A $w \geq 11$ C $w > 11$
- B $w \leq 11$ D $w < 11$

Go On

9 In the diagram below, which pair of angles is complementary?

- A $\angle 1$ and $\angle 2$
- B $\angle 2$ and $\angle 3$
- C $\angle 2$ and $\angle 4$
- D $\angle 3$ and $\angle 4$

[not drawn to scale]



10 Jessica went shopping for a new watch. She found a watch that was originally priced at \$50 on sale for \$40. By what percent had the watch been marked down?

- A 10%
- B 20%
- C 25%
- D 40%

11 Multiply $(a + 2)(3a - 1)$.

- A $3a^2 - 2$
- B $3a^2 + 5a$
- C $3a^2 + 4a - 2$
- D $3a^2 + 5a - 2$

12



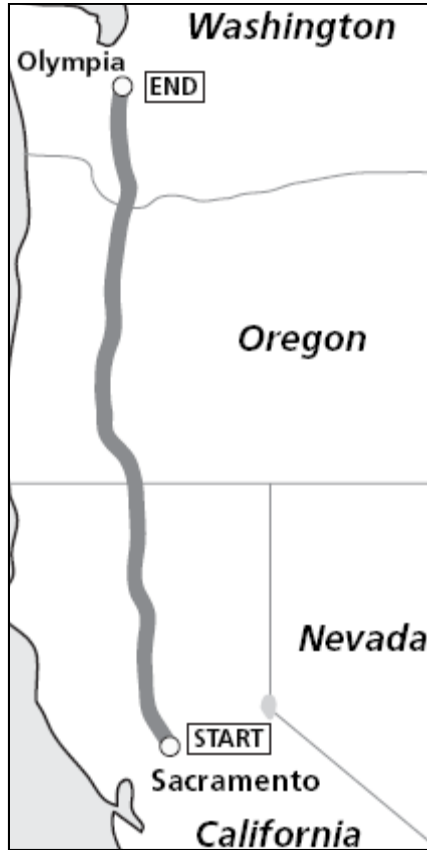
Use your ruler to help you solve this problem.

Diane is taking a trip from Sacramento, California, to Olympia, Washington. Her route is shown on the map below.

According to the map, what is the approximate distance from Sacramento, California, to Olympia, Washington?

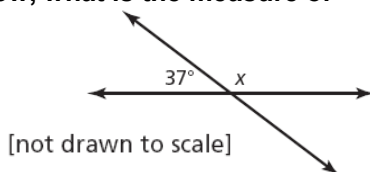
- A 625 miles
- B 750 miles
- C 875 miles
- D 1,000 miles

KEY
1 inch = 250 miles



13 In the diagram below, what is the measure of angle x ?

- A 37°
- B 53°
- C 127°
- D 143°



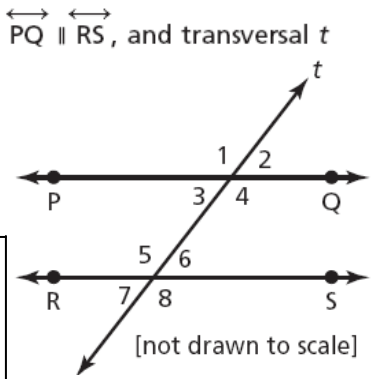
14 The cost of Cynthia's dinner is \$15.20. She pays an additional tip that is 20% of the cost of the dinner. What is the best estimate for the amount of the tip?

- A \$2.00
- B \$3.00
- C \$4.00
- D \$5.00

15 In the diagram below, $PQ \parallel RS$, and transversal t intersects both lines.

Which angle is the same size as $\angle 7$?

- A $\angle 1$
- B $\angle 3$
- C $\angle 4$
- D $\angle 5$



16 Find the value of x in the equation below.

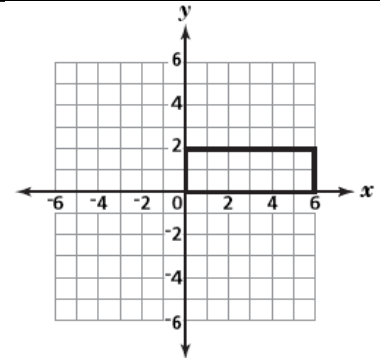
$$3(x + 2) = x$$

- A -3
- B -1
- C 2
- D 3

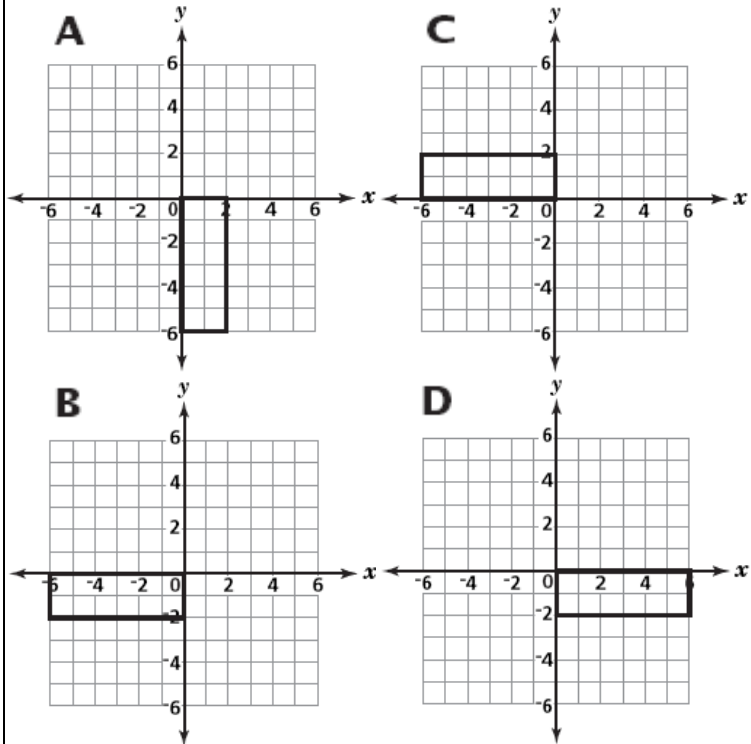
[not drawn to scale]

17

A rectangle is plotted on the coordinate plane below. (at right \rightarrow)



Which image shows a 90° clockwise rotation about the origin?



18 What verbal expression is the same as the algebraic expression below?

$$8 - 3x$$

- A three times a number minus eight
- B three minus eight times a number
- C eight times a number minus three
- D eight minus three times a number

19 Simplify the expression below.

- A $4xy^2$
- B $4x^2y^2$
- C $\frac{4}{xy^2}$
- D $\frac{4x}{y^2}$

$$\frac{12x^2y^3}{3xy}$$

20

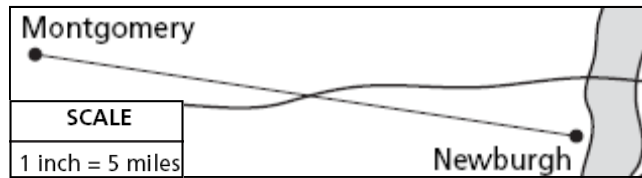
Simplify the expression below.

$$10y^2 - 15y^2 \quad \text{A } -5 \quad \text{B } 5 \quad \text{C } -5y^2 \quad \text{D } -5y^4$$

21

Use your ruler to help you solve this problem.

Each morning, a bird flies from his tree in Montgomery to his favorite feeder in Newburgh, as shown in the scale drawing below.



Approximately how many miles does the bird fly from the tree to the feeder each morning?

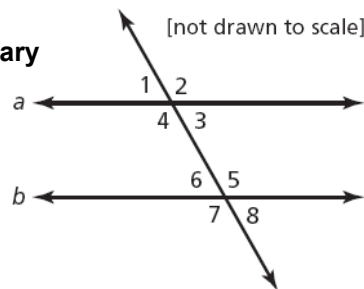
A 2 B 6 C 13 D 18

22

In the diagram below, lines a and b are parallel.

Which angle is supplementary to $\angle 2$?

A $\angle 3$ C $\angle 5$
B $\angle 4$ D $\angle 7$



23

Factor the expression below using the greatest common factor (GCF).

$$12n^5 + 8n^3 + 6n$$

A $2n(6n^4 + 4n^2 + 3)$ C $2n(12n^5 + 4n^2 + 6)$
B $2n(6n^5 + 4n^3 + 3n)$ D $2n(6n^4 + 8n^3 + 6n)$

24

Which of these phrases best describes a polynomial?

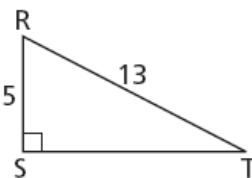
- A a decimal that is non-terminating or non-repeating
B an algebraic expression containing one or more terms
C a close-planned figure formed by three or more line segments
D a number greater than one that has exactly two different factors

25

Triangle RST is shown below. What is the length of \overline{ST} ?

A 5 C 12
B 8 D 18

Pythagorean theorem:
 $c^2 = a^2 + b^2$



26

The area of triangle RST is 36 square inches. Under which transformation could the area of the image, triangle R'S'T', be greater than 36 square inches?

A dilation B reflection C rotation D translation

27

Simplify the expression below.

$$4k^2 + 5k - 3 + 5k^2 + 2$$

A $4k^2 + 10k - 1$ C $9k^2 + 7k - 3$
B $9k^2 + 5k - 1$ D $14k^2 + 5k - 1$

STOP

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Here are some suggestions to help you do your best:

- Be sure to read carefully all the directions in the test book.
- You may use your tools to help you solve any problem on the test.
- Read each question carefully and think about the answer before writing your response.
- Be sure to show your work when asked. You may receive partial credit if you have shown your work.
- Use your calculator to help you solve the problems on this part of the test.



Use your ruler to help you solve this problem.

NO PROTRACTORS! NO PROTRACTORS! NO PROTRACTORS!

Mathematics Reference Sheet

FORMULAS

Pythagorean Theorem



$$c^2 = a^2 + b^2$$

Simple Interest

$$I = prt$$

Distance Formula

$$d = rt$$

CONVERSIONS

Temperature Conversions

$$F = \frac{9}{5}C + 32$$

$$C = \frac{5}{9}(F - 32)$$

Measurement Conversions

$$1 \text{ mile} = 5,280 \text{ feet}$$

$$1 \text{ yard} = 3 \text{ feet}$$

Book 2

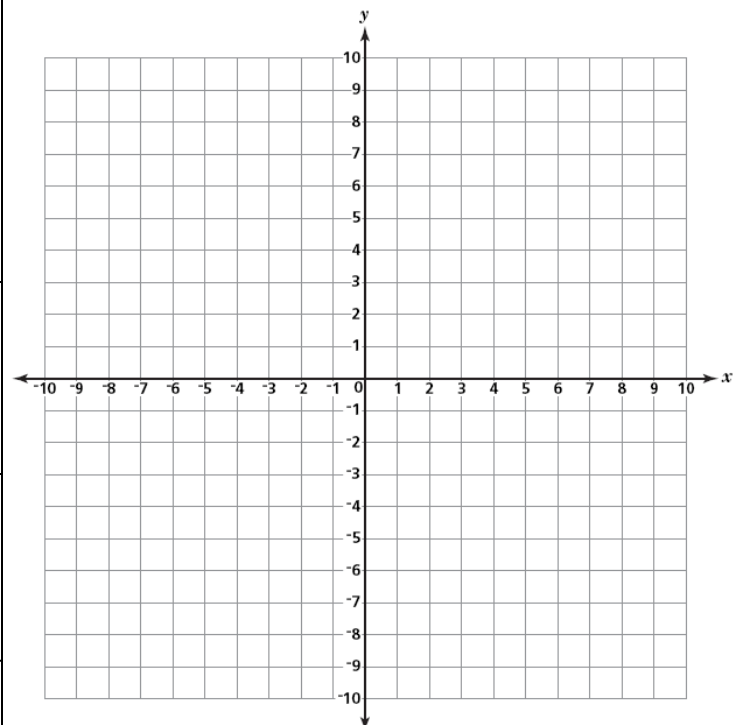
40 Minutes

28

The table below shows values for x and y when $y = 3x - 2$.

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

Complete the table by finding the value of y when $x = 2$. Plot the ordered pairs shown in the table onto the coordinate plane below. Then draw a line connecting the points.



A point on the line has an x -coordinate of 3. What is its corresponding y -coordinate?

Answer _____

Go On

29 Coretta buys a pair of jeans that is on sale for 20% off. The regular price is marked as \$27.00. What is the sale price of the pair of jeans?

Answer \$ _____ Show your work.

30 Rita multiplied the monomials $12a^3b^6$ and $3ab^2$ as shown below.
 $(12a^3b^6)(3ab^2) = 36a^4b^8$

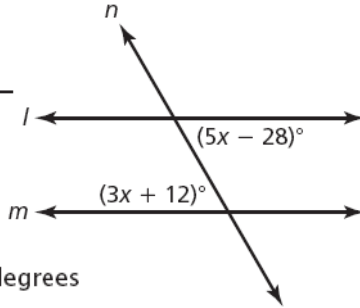
Is Rita's answer correct? On the lines below, explain how you determined your answer. (5 lines)

31 In the diagram below, line l and line m are parallel.

Solve for x .

Show your work.

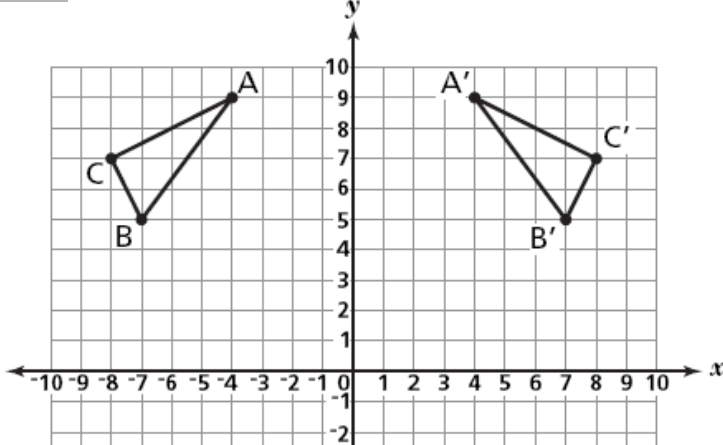
Answer $x =$ _____



What is the measure of the angle represented by $5x - 28$?

Answer _____ degrees

32 Triangle ABC and triangle A'B'C' are plotted on the coordinate plane below.



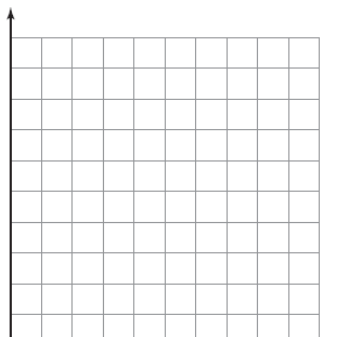
What is the name of the transformation applied to triangle ABC that resulted in triangle A'B'C'?

Answer _____

On the lines below, describe how the coordinates of point A changed to the coordinates of point A'. (5 lines)

33 A pool is being filled with water. It already contains 100 gallons of water and it continues to be filled at a constant rate. Complete the table below to show the number of gallons of water in the pool after 3 minutes and after 4 minutes.

Time in Minutes (m)	Gallons of Water (g)
0	100
1	120
2	140
3	
4	



Plot the ordered pairs from the table onto the graph. Then draw a line segment connecting the points.

STOP

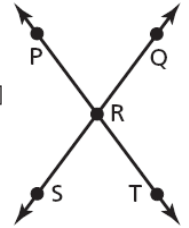
70 Minutes

34 In the diagram below, $\angle PRQ$ measures 73° .

What is the measure of $\angle QRT$?

Show your work.

[not drawn to scale]



Answer _____ degrees

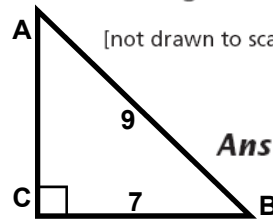
35 What is the polynomial resulting from the subtraction below?

$$(3x^2 + 4x - 7) - (x^2 - 2x + 6)$$

Show your work.

Answer _____

36 In triangle ABC below, \overline{AB} is 9 meters long and \overline{BC} is 7 meters long. Use the Pythagorean theorem to find the length of \overline{AC} to the nearest tenth of a meter.



[not drawn to scale] Show your work.

Answer _____ meters

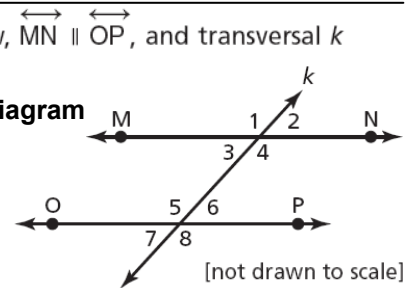
37 In the diagram below, $\overline{MN} \parallel \overline{OP}$, and transversal k intersects both lines.

Name two angles in the diagram that are congruent to $\angle 4$.

Answer \angle _____

and

\angle _____



[not drawn to scale]

On the lines below, explain how you determined these angles are congruent to $\angle 4$. (5 lines)

38 Tyrone travels internationally on business. On a trip to Japan, Tyrone uses the exchange rates in the tables shown below.

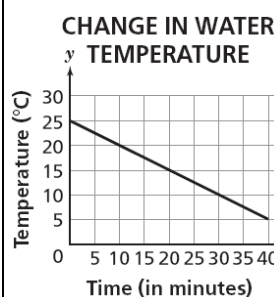
U.S. Dollar	Japanese Yen	Japanese Yen	U.S. Dollar
\$1.00	115.19¥	1¥	\$0.008681

What is the value of 75 U.S. dollars in Japanese yen? Round your answer to the nearest yen.

Show your work.

Answer _____ ¥

39 The graph below shows the change in water temperature of a glass of tap water placed into a freezer.



Use information in the graph to determine how many total minutes it takes the water to reach 0°C .

Answer _____ minutes

On the lines below, explain how you determined your answer.

(5 lines)

Go On

40 Ramona is a travel agent. She receives a 6% commission on vacation package sales.

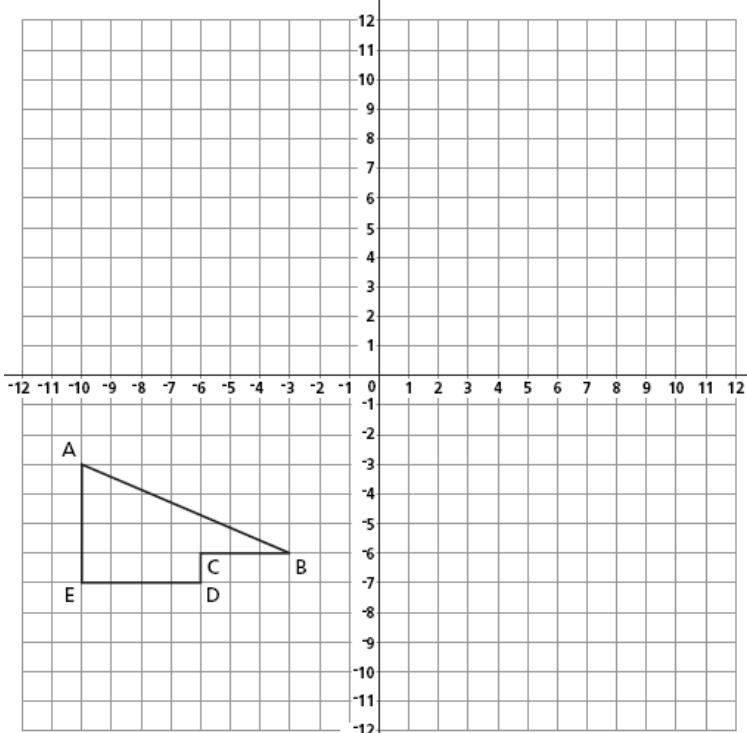
Part A How much commission will Ramona make if she sells \$3,600 in vacation packages?

Show your work. Answer \$ _____

Part B Ramona receives an additional 2% bonus on the sale of vacation packages during February. What would be her combined commission and bonus if she sells \$3,600 in vacation packages during February?

Answer \$ _____

41 On the coordinate plane below, draw the image of polygon ABCDE translated 8 units to the right and 4 units up. Label the image A'B'C'D'E'.



42 Consuelo is grocery shopping and sees that the price of 4 melons is \$7.00. Write a proportion that Consuelo can use to find the price of 1 melon.

Proportion _____

Use your proportion to find the price of 1 melon.

Show your work. Answer \$ _____

43 The table below shows the coordinates of triangle RST and the coordinates of R' in triangle R'S'T'. Triangle R'S'T' is a dilation of triangle RST.

	Triangle RST		Triangle R'S'T'
R	(-2, -3)	R'	(-6, -9)
S	(0, 2)	S'	
T	(2, -3)	T'	

Part A

What are the coordinates of point S' and point T'?

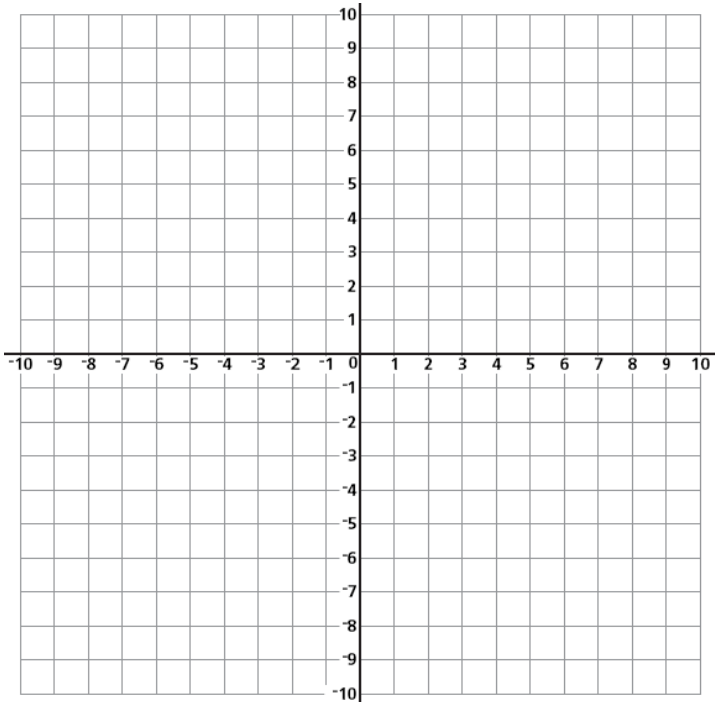
Answer S' = (____, ____)

T' = (____, ____)

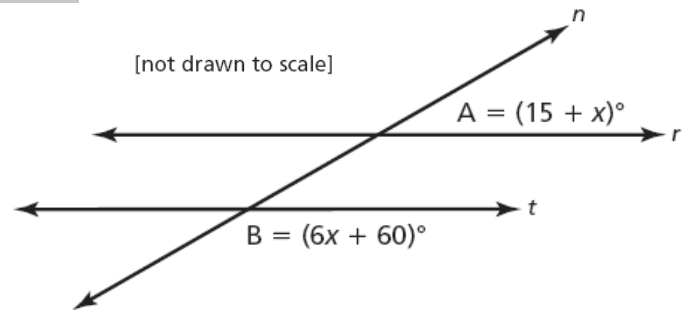
(THIS QUESTION IS CONTINUED IN THE NEXT COLUMN)

43 Part B

On the grid below, draw triangle RST and triangle R'S'T'.



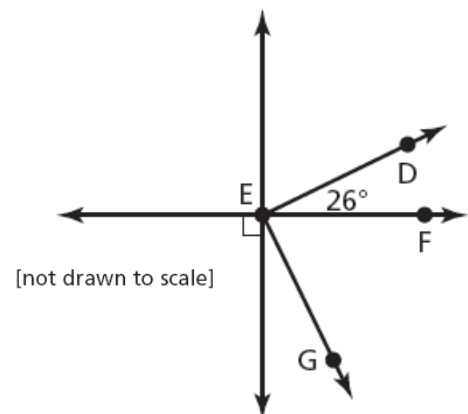
44 In the diagram below, line r and line t are parallel. Line n is a transversal.



What is the measure, in degrees, of $\angle A$?

Show your work. Answer _____ degrees

45 In the diagram below, $\angle DEF$ and $\angle FEG$ are complementary.



What is the measure of $\angle FEG$?

Show your work.

Answer _____ degrees

STOP