



New York State Testing Program

Grade 8

March 12–16, 2007 Mathematics Book 1

49178



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35 Minutes

TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

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- 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.



This picture means that you will use your ruler.



This picture means that you will use your protractor.

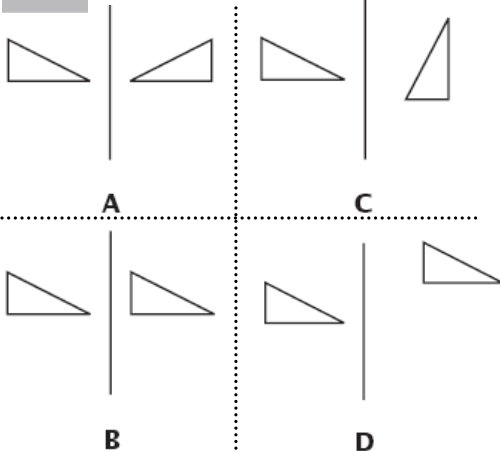
Sample A What is the shape of each base of a cylinder? A circle B rectangle C triangle D square

Sample B Ellen buys 24 ounces of green beans at the grocery store. The green beans cost \$1.90 per pound. How much does she pay for the green beans, before tax? A \$1.90 B \$2.53 C \$2.85 D \$3.80

1 pound = 16 ounces

STOP

1 Which figure below shows a reflection?



2 Anneke and her parents had dinner at their favorite restaurant. The dinner bill was \$50.00, and her parents tipped their server 20% of the bill. How much money did Anneke's parents leave as a tip?

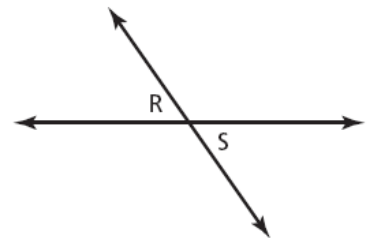
- A \$1.00 B \$10.00 C \$20.00 D \$25.00

3 Simplify the expression below.
 $12xy - 15x + 6xy$ A $-9xy$ C $18xy - 15x$
B $3xy$ D $6xy - 15x$

4 In the figure below, $\angle R$ and $\angle S$ are formed by two intersecting lines.

If $\angle R$ measures 55° , what is the measure of $\angle S$?

- A 35° C 110°
B 55° D 125°



5 What value of x makes the equation below true?

- A 1 C 13
B 5 D 19

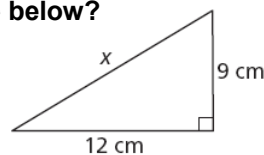
$$\frac{x+3}{2} = 8$$

7 The scale of a map is $\frac{1}{4}$ inch = 12 miles. The distance between two cities on the map is $3\frac{1}{4}$ inches. What is the actual distance, in miles, between the two cities?

- A 37 B 39 C 144 D 156

6 What is the length, in centimeters, of side x in the right triangle below?

- A 8 C 15
B 12 D 21



[not drawn to scale]

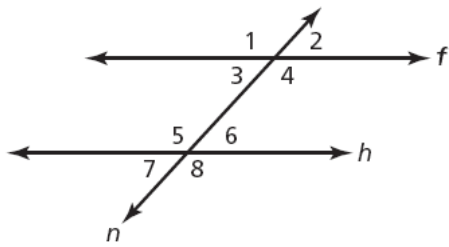
Pythagorean theorem
 $c^2 = a^2 + b^2$

8 Sarah earned a 4% commission on all of her sales in March. Her total sales were \$80,000 in March. How much money did she earn from commissions?

- A \$320 C \$32,000
B \$3,200 D \$320,000

Go On

- 9 In the diagram below, line f and line h are parallel, and line n is a transversal.



Which term expresses the relationship between $\angle 1$ and $\angle 8$?

- A adjacent
B congruent
C supplementary
D complementary

- 10 What is the product of $(6a^2b^3c^4)$ and $(3a^3b^4c)$?

- A $9a^5b^7c^4$ B $9a^5b^7c^5$ C $18a^5b^7c^5$ D $18a^5b^7c^4$

- 11 What is the sum of $(3 + 3)^2$ and 2^3 ?
A 18 B 20 C 26 D 44

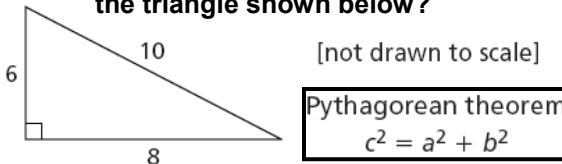
- 12 Simplify the expression below.
 $(3x^3 + 2x^2 - 5x) + (-8x^3 + 3x)$

- A $-11x^3 + 2x^2 - 2x$ C $-5x^3 + 2x^2 - 2x$
B $11x^3 - 2x^2 + 8x$ D $5x^3 - 2x^2 - 8x$

- 17 What is the quotient of $\frac{24x^6y^{12}z^{18}}{6x^3y^6z^9}$?

- A $4x^2y^2z^2$ B $4x^3y^6z^9$ C $18x^2y^2z^2$ D $18x^3y^6z^9$

- 18 Based on the Pythagorean theorem, which relationship is true for the sides of the triangle shown below?



- A $8^2 + 10^2 = 6^2$ C $6^2 + 8^2 = 10$
B $6^2 + 8^2 = 10^2$ D $6^2 + 10^2 = 8^2$

- 21 The table at the right shows a relationship between x and y .

x	y
2	8
4	10
6	12
8	14
10	16

What equation represents the relationship between x and y ?

- A $y = 2x$ C $y = x + 6$
B $y = 4x$ D $y = 2x + 2$

- 23 Simplify the expression below.
 $(3a^2 + 5a - 11) - (11a^2 + 2a - 12)$

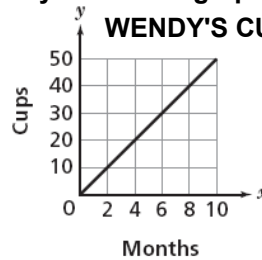
- A $-8a^2 + 3a + 1$ C $14a^2 + 7a + 1$
B $-8a^2 + 7a - 23$ D $14a^2 + 3a - 23$

- 24 What is the product of the expression below?

$$(a - 3b)(2a + 2b)$$

- A $2a^2 - 4ab - 6b^2$ C $2a - 4ab - 6b$
B $2a^2 + 4ab - 6b^2$ D $2a + 4ab + 6b$

- 13 Wendy draws the graph below to represent a situation.



Which statement correctly interprets the graph?

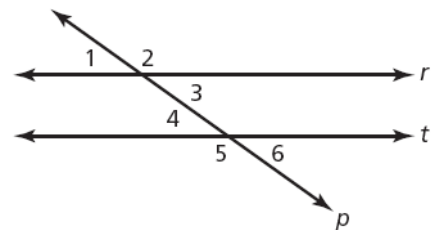
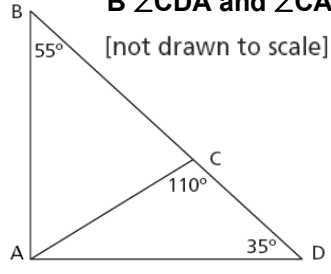
- A Wendy's cup collection is decreasing over time.
B Wendy's cup collection is increasing over time.
C Wendy's cup collection sometimes increases and sometimes decreases.
D Wendy's cup collection remains the same size over time.

- 14 In order to purchase a new CD player, Rosa must save at least \$85.00. What inequality represents the amount of money, m , Rosa must save?

- A $m \leq 85.00$ B $m < 85.00$ C $m \geq 85.00$ D $m > 85.00$

- 15 Which two angles in the triangles below are complementary?

- A $\angle BAC$ and $\angle CAD$ C $\angle ABC$ and $\angle BAC$
B $\angle CDA$ and $\angle CAD$ D $\angle BCA$ and $\angle ACD$



- 16 In the diagram above, line r and line t are parallel, and line p is a transversal.

Which angles are supplementary?

- A $\angle 1$ and $\angle 3$ B $\angle 1$ and $\angle 2$ C $\angle 3$ and $\angle 6$ D $\angle 3$ and $\angle 4$

- 19 A 20-ounce bag of popcorn costs \$2.80. If the unit price stays the same, how much does a 35-ounce bag of popcorn cost?

- A \$3.60 B \$4.00 C \$4.50 D \$4.90

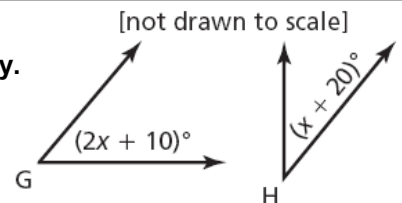
- 20 What is the product of the expression below?
 $(2x - 5)(2x - 3)$

- A $4x^2 + 16x + 15$ C $4x^2 + 16x - 15$
B $4x^2 - 16x - 15$ D $4x^2 - 16x + 15$

- 22 Bruce needs 30 five-foot pieces of rope for a school project. The hardware store sells rope by the yard. How many yards of rope will Bruce need to purchase?

- A 10 B 30 C 50 D 75

- 25 In the diagram below, $\angle G$ and $\angle H$ are complementary.



What is the measure of $\angle G$?

- A 20° B 30° C 40° D 50°

26

Ms. Snyder wants to buy a television at an electronics store. All televisions at the store are $\frac{3}{4}$ of the original price, p . She has a \$40 discount coupon she will use during the sale. Which equation should Ms. Snyder use to find the final price, f , of a television?

- A $f = \frac{3}{4}(p - 40)$ B $f = \frac{1}{4}(p - 40)$
 C $f = \frac{1}{4}p - 40$ D $f = \frac{3}{4}p - 40$

STOP

Book 2

35 Minutes

27



Use your ruler to help you solve this problem.

Maria is planning a car trip from Niagara Falls to East Aurora.



What is the approximate driving distance from Niagara Falls to East Aurora?

- A 20 miles
 B 30 miles
 C 40 miles
 D 50 miles

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 mile = 5,280 feet

1 yard = 3 feet

TIPS FOR TAKING THE TEST

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- 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.



This picture means that you will use your ruler.



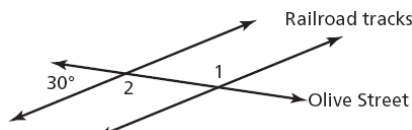
This picture means that you will use your protractor.

28

Olive Street crosses two parallel railroad tracks, as shown below.

[not drawn to scale]

Show your work.



What is the measure of $\angle 1$?

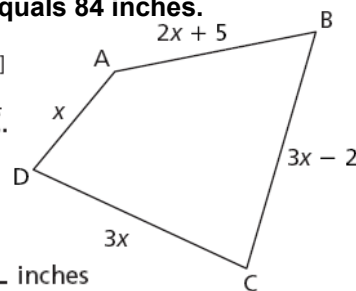
Answer _____ degrees

30

In the figure ABCD shown below, the total length of the sides equals 84 inches.

[not drawn to scale]

Find the length of side \overline{BC} .



Answer _____ inches

31

The transportation department recommends increasing highway tolls by 20% to raise money for road repairs. The current highway toll is \$1.50. What will be the new toll after the 20% increase?

Show your work.

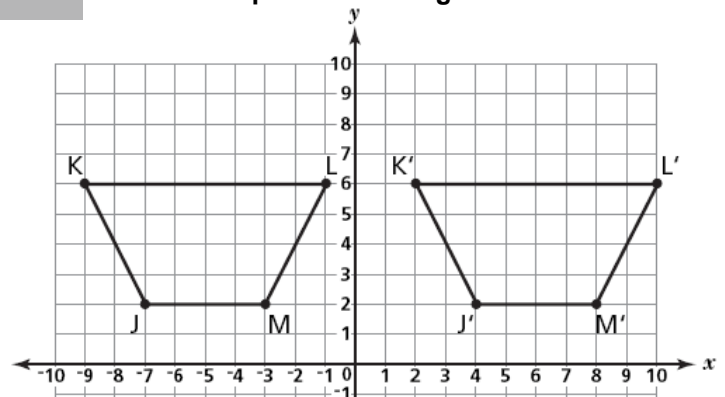
Answer \$ _____

32

THIS QUESTION IS ON THE NEXT PAGE

29

Trapezoid JKLM and its transformation trapezoid J'K'L'M' are plotted on the grid below.



Part A Name the transformation that was applied to trapezoid JKLM to get trapezoid J'K'L'M'.

Answer _____

Part B On the lines below, explain how you determined what transformation was applied to trapezoid JKLM to get trapezoid J'K'L'M'. (5 lines)

33

Rashid wrote the sentence below.

Forty-eight is greater than or equal to four plus the product of a certain number, x , and eleven.

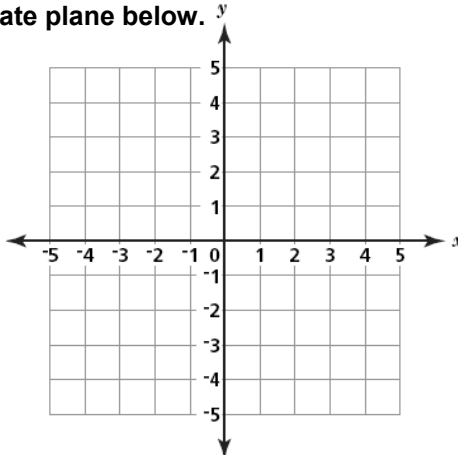
Write Rashid's sentence as an algebraic inequality.

Answer _____

32 Complete the table of values for the equation $y - 3x = 2$.

Using the table of values, graph the line of the equation on the coordinate plane below.

x	y
-2	
-1	
0	
1	



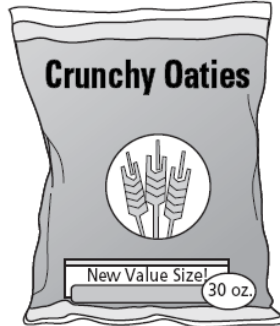
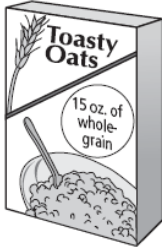
STOP

35 Eliana and her sister are comparing the prices of two brands of cereal. Toasty Oats costs \$2.25 for a 15-ounce box. Crunchy Oaties costs \$3.90 for a 30-ounce bag.

Part A

What is the price per ounce of the Toasty Oats?

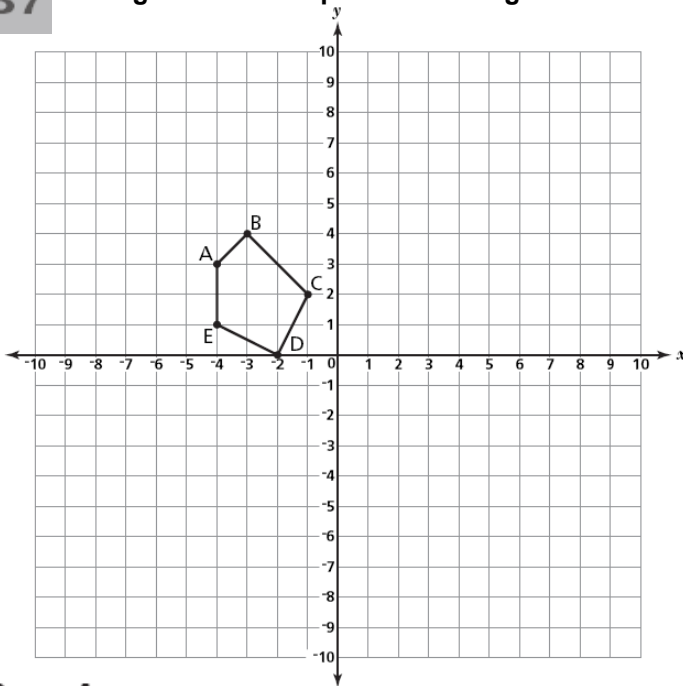
Answer \$ _____ per ounce



Part B

How much more expensive is Toasty Oats per ounce than Crunchy Oaties? Answer \$ _____ per ounce

37 Pentagon ABCDE is plotted on the grid below.

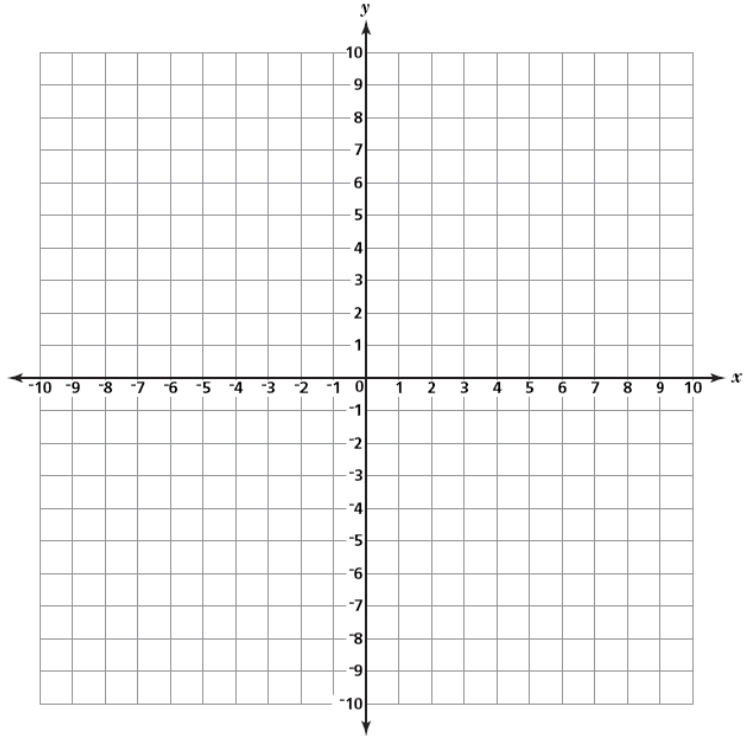


Part A On the grid, draw the translation of pentagon ABCDE five units to the right and three units down. Label the translated figure A'B'C'D'E'.

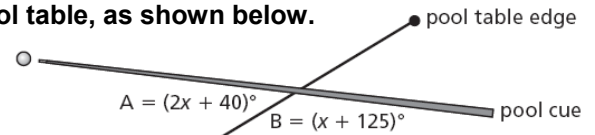
Part B On the lines below, explain how you determined the location of A'. (5 lines)

70 Minutes

34 For a homework assignment, Sarah must draw a line passing through the points $(-3, -3)$ and $(3, 3)$. Graph Sarah's line on the grid below.



36 Gabrielle angles her pool cue against the edge of her pool table, as shown below.



[not drawn to scale]

What is the measure of $\angle A$?

Answer _____ degrees

38 The table below shows the number of chaperones, y , needed for a certain number of students, x , at a school dance.

SCHOOL DANCE

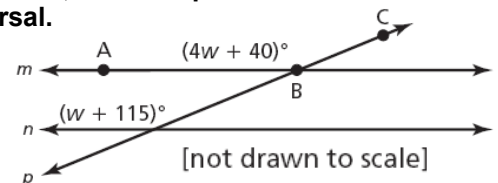
Number of Students (x)	32	48	64	96
Number of Chaperones (y)	4	6	8	12

Write an equation that represents the relationship between the number of chaperones needed and the number of students attending a dance.

Equation _____

How many chaperones will be needed for a dance that has 240 students? Answer _____ chaperones

39 In the figure below, line m is parallel to line n . Line p is a transversal.



[not drawn to scale]

What is the measure of $\angle ABC$?

Answer _____ degrees

40 The table below shows Jeffrey's bank account balance for the past six weeks.

JEFFREY'S BANK ACCOUNT

Week (w)	Balance (b)
1	\$10
2	\$24
3	\$38
4	\$52
5	\$66
6	\$80

Using information from the table, write an equation that represents the balance, b , in Jeffrey's bank account as a function of the number of weeks, w .

Answer _____

Use your equation or the information in the table to find what Jeffrey's bank account balance will be in Week 8.

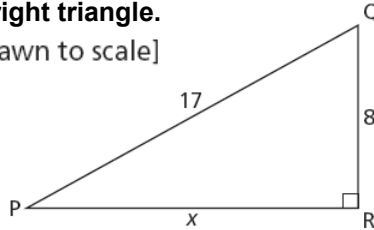
Answer \$ _____

42 Triangle PQR is a right triangle. [not drawn to scale]

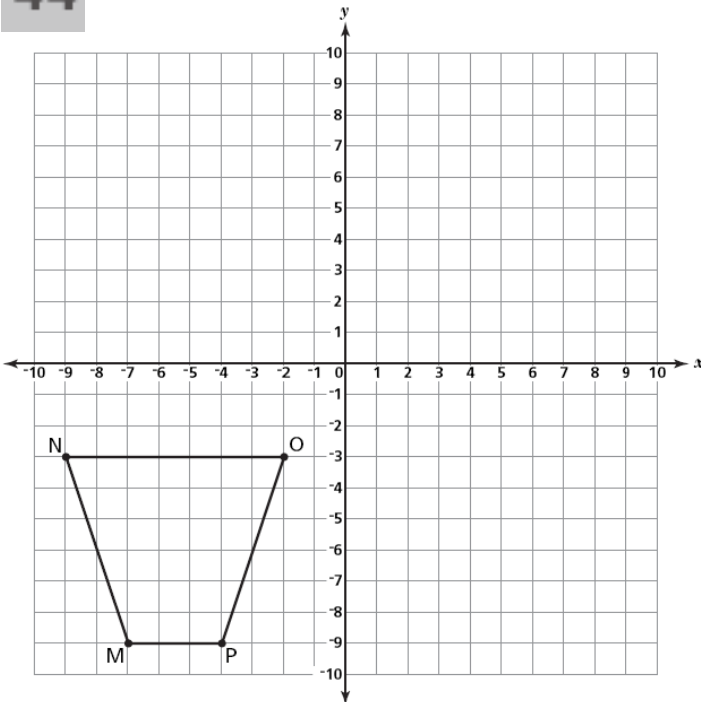
Show your work.

What is the length of side x ?

Answer _____



44 Trapezoid MNOP is plotted on the grid below.



Part A

On the grid, draw the image of trapezoid MNOP after a reflection over the y -axis. Label the new trapezoid $M'N'O'P'$.

Part B

On the lines below, explain how you determined the location of point M' . (5 lines)

41 Zach earns \$160 per week at a local market. He makes a payment of \$12 per week for a new bike. He spends \$75 each week on food and entertainment. Zach deposits the rest of his money in a savings account. Zach estimates that he deposits about 25% of the \$160 into his savings account each week.

Part A Is Zach's estimate correct?

Answer _____

On the lines below, explain how you determined your answer. (5 lines)

Part B How much of his weekly earnings would Zach need to deposit in order to save 40%?

Answer \$ _____

43 Two lines intersect at point B, as shown below. Show your work. [not drawn to scale]

Part A

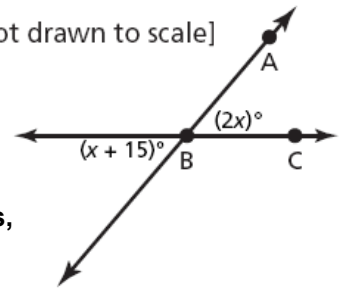
What is the value of x ?

Answer _____

Part B

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

Answer _____ degrees



45 Shawna compares the prices to download music from two different web sites.

New Tunes
\$5.00 sign-up fee
\$0.75 per song

New Music
\$9.00 sign-up fee
\$0.50 per song

Shawna wrote the equation below to determine when the two plans will cost the same. She uses s to represent the number of songs.

$$0.75s + 5 = 0.50s + 9$$

What number of songs must be downloaded for both music plans to cost the same?

Show your work. Answer _____ songs

STOP