THINGS YOU SHOULD KNOW:

Conversions:

100 centimeters = 1 meter
12 inches = 1 foot
3 feet = 1 yard
8 ounces = 1 cup
2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon

Formulas:

Area of squares and rectangles : $A = l \cdot w$
Volume of rectangular prisms : $V = l \cdot w \cdot h$

Order of Operations:

P : Parenthesis
E : Exponents
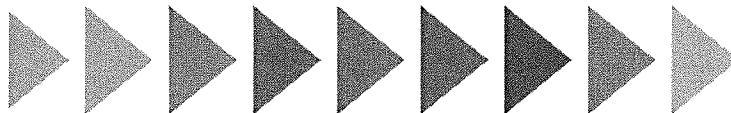**MD :** Multiplication OR Division (from left to right)
AS : Addition OR Subtraction (from left to right)

Fractions:

To find a common denominator, find the least common multiple of the denominators in the problem.

Decimals:

Line up decimals when adding and subtracting.
Count decimal places when multiplying.

5

P E MD AS

SIMPLIFYING EXPRESSIONS

▶▶▶▶▶▶ Simplify each expression using the order of operations. ◀◀◀◀◀◀

$60 - (2 \cdot 4) - 9$	$2[3 + 2(5 - 1)]$	$10 + (6 \div 2) - 4$	$6 + 2[5 + (2 \cdot 3)]$
$6(2 + 3) - 3(8 - 2)$	$15 + 3[2(5 + 4) - 2]$	$2(5) - 10$	$18 - 2[14 - 3(2)]$
$2 + 14 \cdot 2 \div 4$	$81 \div 27 \cdot (8 - 5)$	$\dfrac{15 + 30}{6 - 1}$	$24 - 2(9)$
$4 + 2(3 \cdot 4)$	$40 \div 4 \cdot (3 - 2)$	$(16 - 4) \cdot 4 + 3$	$120 - 5[2(3 \cdot 2) - 2]$

7

WRITING EXPRESSIONS

▶▶▶▶▶ Write an expression to represent each verbal phrase. ◀◀◀◀◀

Subtract 9 and 2, then multiply by 4. $(9-2) \cdot 4$	Divide 8 by 2 and then add 1.	Triple 4 and then add 6.
Add 2 and 8 and then multiply by 2.	Double 6 and then divide by 3.	Add 4, 6 and 13.
Subtract 9 and 2 and add 5.	4 plus the product of 2 and 7.	The sum of 6 times 5 and 9 minus 2.
8 less than the quotient of 20 and 5.	The product of 4 and triple the number 2.	Multiply 5 and 7 and then divide by 5.
The difference of four times four and six.	4 more than the difference of 10 and 2.	20 divided by the product of 2 and 4.

8

PLACE VALUE

What is the (difference) in the value of the 2 in each number below? 83**2** and **2**99 ↑ ↑ ones hundreds $200 - 2 = 198$	What is the difference in the value of the 5 in each number below? 5,934 and 587	Explain the relationship between the 9 in the ones place and 9 in the thousands place in the number 9,999.
Explain the relationship between the 5 in the ones place and the 5 in the tens place in the number 55. 5 tens is 10 times greater than 5 ones.	Explain the relationship between the 7 in the hundreds place and the 7 in the ones place in the number 707.	What is the value of the underlined digit? 46.96<u>5</u>
What is the value of the underlined digit? 1,425.<u>8</u>6	What is the value of the underlined digit? 32,<u>9</u>62.8	What is the difference in the value of the 6 in each number below? 465 and 2,697
What is the value of the underlined digit? 3,4<u>8</u>6.77	What is the value of the underlined digit? 899.3<u>5</u>4	Explain the relationship between the 4 in the tenths place and the 4 in the tens place in the number 42.4.
Explain the relationship between the 8 in the thousands place and the 8 in the tens place in the number 8,084.	What is the value of the underlined digit? <u>5</u>,924.87	What is the difference in the value of the 7 in each number below? 7,629 and 500.75 12

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POWERS OF TEN

What is the relationship between the exponent in $4.3 \cdot 10^3$ and 4,300?	What is the relationship between the exponent in $8.2 \div 10^2$ and 0.082?	What is the relationship between the exponent in $5 \cdot 10^6$ and 5,000,000?

Complete the pattern: $4.2 \cdot 10 = 4.2 \cdot 10^{\square} = \underline{\hspace{2cm}}$ $4.2 \cdot 10 \cdot 10 = 4.2 \cdot 10^{\square} = \underline{\hspace{2cm}}$ $4.2 \cdot 10 \cdot 10 \cdot 10 = 4.2 \cdot 10^{\square} = \underline{\hspace{2cm}}$		Is the multiplication sentence below true? Explain. $5.3 \cdot 10^4 = 530,000$

If $6 \cdot 3 = 18$, then $600 \cdot 3 = ?$	$53.2 \cdot \underline{\hspace{1.5cm}} = 532,000$	If $400 \cdot 5 = 2,000$, then $400 \cdot 500 = ?$

Solve: $7.95 \cdot 10^3$	Solve: $6,000,000 \div 10^3$	Solve: $4.02 \cdot 10^2$

Solve: $7.95 \div 10^3$	Solve: $6,000,000 \cdot 10^3$	If $4 \cdot 2 = 2,000$, then $2,000 \cdot 40 = ?$
		13

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EXPANDED FORM

Write the number below in expanded form using fractions. 5,482	Write the number below in expanded form using fractions. 38.25	Write the number below in expanded form using fractions. 4.082
Write in numeric form. "Fifteen and two hundredths"	Write in numeric form. $(8 \cdot 10) + (4 \cdot 1) + (5 \cdot \frac{1}{100})$	Write in numeric form. $(5 \cdot 100) + (2 \cdot \frac{1}{10})$
Write the number below in expanded form. 800.124	Write in numeric form. "Four thousand three hundred one"	Write in numeric form. "Nine and two tenths"
Write a number equivalent to 0.7.	Write a number equivalent to 0.4050.	Write a number equivalent to 6.203.
Write the number below in expanded form using fractions. 250.6	Write the number below in expanded form using fractions. 0.046	Write a number equivalent to 400.39.

14

COMPARE & ORDER DECIMALS

▷▷▷▷▷▷▷▷▷

Use <, >, or = to compare the two numbers. 4.5 _____ 4.420	Use <, >, or = to compare the two numbers. 0.67 _____ 0.8	Use <, >, or = to compare the two numbers. 0.125 _____ 0.2
Use <, >, or = to compare the two numbers. 0.82 _____ 0.820	Use <, >, or = to compare the two numbers. 62.4 _____ 6.24	Use <, >, or = to compare the two numbers. 5.23 _____ 5.3
Put the following the numbers in order from least to greatest. 0.3, 0.13, 0.32, 0.303	Put the following the numbers in order from least to greatest. 8.2, 0.82, 0.8, 0.08	Use <, >, or = to compare the two numbers. 9.62 _____ 9.504
Put the following the numbers in order from greatest to least. 24.4, 24.54, 24.304, 24.24	Put the following the numbers in order from greatest to least. 6.05, 6.007, 6.5, 6.25	Use <, >, or = to compare the two numbers. 1.324 _____ 1.42
Put the following the numbers in order from greatest to least. 0.2, 0.02, 0.22, 0.022	Put the following the numbers in order from greatest to least. 5.14, 5.4, 5.04, 5.1, 5.41	Put the following the numbers in order from least to greatest. 2.96, 2.9, 2.609, 2.906, 2.6

15

MULTI-DIGIT MULTIPLICATION

▶▶▶▶▶▶▶▶▶ Find each product. ◀◀◀◀◀◀◀◀◀

452 • 82	5,212 • 40	326 • 30
182 • 63	948 • 45	415 • 12
1,255 • 81	4,124 • 22	1,800 • 45

A box contains 32 candy bars. How many candy bars would be in a shipment of 563 boxes?	A stadium has 1,200 rows of seats. Each row has 82 seats. How many people can fit in the stadium?
164 books were sold in a book store today. If the same number were sold each day, how many books would be sold after 24 days?	

17

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MULTI-DIGIT DIVISION

Find each quotient.

186 ÷ 62	525 ÷ 15	896 ÷ 14
288 ÷ 32	688 ÷ 86	156 ÷ 12
1,232 ÷ 14	540 ÷ 20	720 ÷ 48

A bag of candy contains 24 pieces. How many bags are needed for a school of 864 students if each student receives one piece?	A theater has rows of 32 seats. How many rows are needed if 960 people attend a performance at the theater?
Construction paper comes 16 sheets per pack. How many packs need to be purchase in order to get 224 pieces?	

18

ADDING DECIMALS

▶▶▶▶▶   ◀◀◀◀◀

Find each sum.

13.2 + 6.84	19.12 + 0.45	9.326 + 1.42	20.6 + 320.86
12.89 + 4	5.032 + 9.6	15.5 + 3.04	16.32 + 19.404

You buy 2.67 pounds of apples and 4.9 pounds of oranges. How many pounds of fruit did you buy?	Emma grew 2.6 inches last summer and 1.89 during the school year. How much did she grow over the last year?
Gina has three rolls of ribbon. One roll has 12.6 inches, the second has 18.24 inches long and the last has 19.05 inches of ribbon. How much ribbon does she have?	Mark ran 5.23 miles yesterday, 6.4 miles today and will run 2.14 miles tomorrow. How far will he run over the three days?

19

Line up decimals
SUBTRACTING DECIMALS

▶▶▶▶▶▶▶▶▶ Find each difference. ◀◀◀◀◀◀◀◀◀

15.2 − 6.25	9.35 − 0.6	10.362 − 1.2	30.5 − 3.23
12.9 − 8.2	8 − 0.25	15.5 − 3	16.32 − 8.1

Your lunch bill is $13.14. A friend pays $6.99. How much is left to pay?	You cut a 2.675 foot section from an 8.9 foot piece of wood. How much is left?
Ryan bought 5.67 pounds of candy and ate 2.9 pounds. How much is left?	Travis has a $20 gift card. He spent $9.62 and then another $2.49. How much is left on the gift card?

20

multiply normally then place decimal

MULTIPLYING DECIMALS ◄◄◄

Find each product.

3.2 • 4.6	8.9 • 4.1	6.2 • 3.9	8.2 • 0.4
3.2 ← 1 digit x 4.6 ← 1 digit 192 1280 14.72 ←2 digits			
6.12 • 4.3	9.86 • 0.2	4.32 • 0.15	62.3 • 1.4
5.82 • 1.6	13.45 • 2.2	20.04 • 8.4	50.4 • 0.22

Veronica ran 2.5 times around a 4.62 mile course. How far did she run?	A car drove 5 times around a 3.67 mile track. How far did it travel?
	21

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DIVIDING DECIMALS

Find each quotient.

$13.2 \div 6$	$9.4 \div 2$	$8.3 \div 5$	$29.2 \div 4$
$$\begin{array}{r} 2.2 \\ 6\overline{)13.2} \\ -12\!\downarrow \\ \hline 1\,2 \\ -1\,2 \\ \hline 0 \end{array}$$ $\boxed{2.2}$			
$25.2 \div 5$	$6.4 \div 8$	$10.35 \div 9$	$30.4 \div 8$

A 32.34 inch piece of ribbon is cut into 6 pieces. How long is each piece?	A 14.24 pound bag of cheese is split among 5 pizzas. How much chees is on each pizza?
An 8.2 pound bag of candy is shared equally among 10 teachers. How much candy did each teacher get?	A 6.5 foot long piece of wood is cut into 5 sections. How long is each section?

22

common denominator
SUBTRACTING FRACTIONS

▶▶▶▶▶▶▶▶▶▶ Find each difference. ◀◀◀◀◀◀◀◀◀◀

$8\dfrac{1}{2} - 4\dfrac{1}{5}$	$6\dfrac{3}{4} - 2\dfrac{1}{8}$	$5\dfrac{3}{5} - 1\dfrac{1}{3}$	$10\dfrac{4}{5} - 3\dfrac{1}{2}$
$9\dfrac{7}{8} - \dfrac{2}{3}$	$15\dfrac{9}{10} - 4\dfrac{5}{8}$	$8\dfrac{2}{3} - 5\dfrac{1}{5}$	$4\dfrac{5}{6} - 1\dfrac{1}{8}$

You cut a $2\dfrac{1}{3}$ foot section from an $8\dfrac{1}{2}$ piece of wood. How much is left?	Wayne ran $3\dfrac{1}{2}$ miles out of a $9\dfrac{2}{3}$ mile race. How much further does he have left to run?

24

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MULTIPLYING FRACTIONS

multiply numerator then multiply denominator

Find each product.

$\frac{2}{5} \cdot \frac{7}{10}$	$\frac{2}{3} \cdot \frac{8}{1}$	$\frac{5}{6} \cdot \frac{1}{2}$	$10 \cdot \frac{4}{5}$
$3\frac{^{+1}}{2} \cdot 4$ $^{\times 2}$ $\uparrow$ make improper $\frac{7}{2} \circ 4 = \frac{28}{2}$	$6\frac{1}{8} \cdot 2\frac{1}{2}$	$4\frac{2}{3} \cdot 6\frac{1}{4}$	$5\frac{1}{2} \cdot 5\frac{1}{2}$
$8\frac{1}{3} \cdot 2\frac{1}{4}$	$3\frac{3}{5} \cdot 6\frac{1}{5}$	$9\frac{1}{2} \cdot 1\frac{7}{10}$	$8 \cdot 2\frac{1}{2}$
You ran $4\frac{1}{2}$ times around a $2\frac{1}{4}$ mile track. How far did you run?		You car drove $5\frac{3}{5}$ times around a $2\frac{1}{8}$ mile track. How far did the car travel?	

25
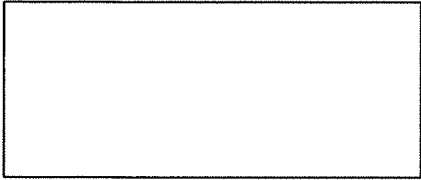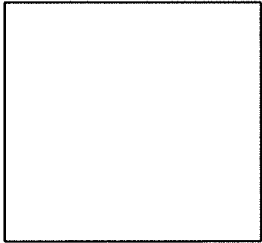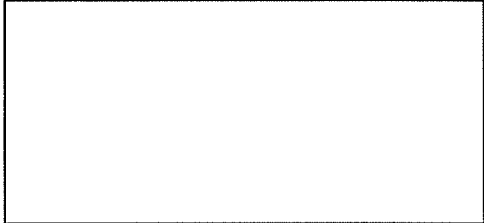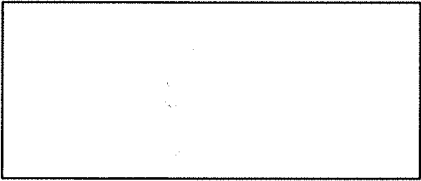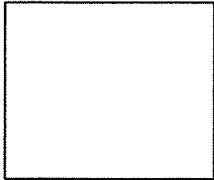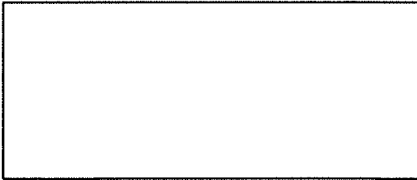
▶▶▶▶ DIVIDING FRACTIONS ◀◀◀◀

Find each quotient.

$\frac{2}{5} \div 8$ keep → $\frac{2}{5}$ change × flip $\frac{1}{8}$ = $\boxed{\frac{2}{40}}$	$\frac{5}{6} \div 4$	$\frac{7}{8} \div 2$	$\frac{9}{10} \div 4$
$3\frac{1}{2} \div 5$	$6\frac{1}{5} \div 2$	$9\frac{1}{3} \div 3$	$5\frac{2}{5} \div 2$

You split $8\frac{1}{2}$ pounds of strawberries equally among 5 containers. How many pounds of strawberries are in each container?	A $12\frac{1}{5}$ inch long piece of ribbon is cut into 4 pieces. How long is each piece?
A $4\frac{9}{10}$ foot long piece of wood is cut into 6 sections. How long is each section?	A $12\frac{2}{3}$ pound bag of chocolate is split equally among 20 boxes. How much chocolate is in each box?

26

AREA OF QUADRILATERALS

Find the area of each shape.   ◀◀◀◀◀◀◀◀

Inches:	Feet:
4 9	6.5
_____ in²	

Centimeters:	Inches:
2.15 8	$4\frac{3}{4}$ $12\frac{1}{2}$

Meters:	Yards:
3.4 6.8	2.9 15

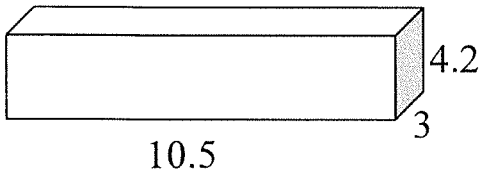| Inches:	Feet:
8 $8\frac{1}{4}$	$4\frac{1}{4}$ $10\frac{3}{5}$

27

VOLUME

▶▶▶▶▶▶▶▶   ◀◀◀◀◀◀◀◀◀

Find the volume of each shape.

Feet

8

8

7

_____ ft³

Inches

$3\frac{1}{2}$

3

$4\frac{1}{2}$

Feet

8

3

6

Centimeters

4.2

3

10.5

Inches

8.3

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VOLUME

▶▶▶▶▶▶▶▶   ◀◀◀◀◀◀◀◀◀
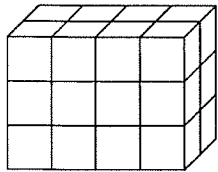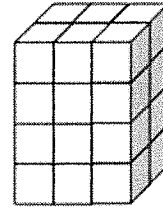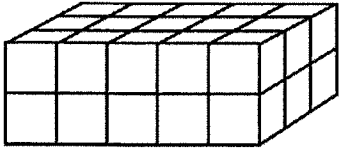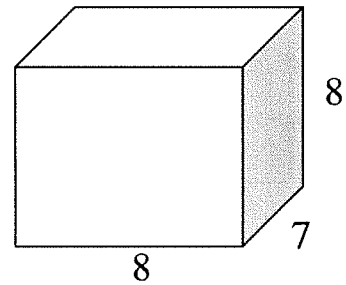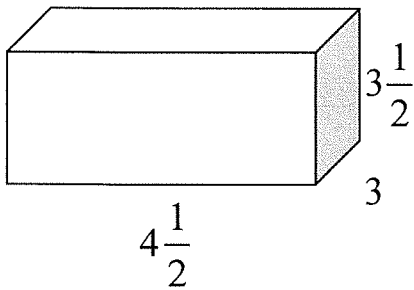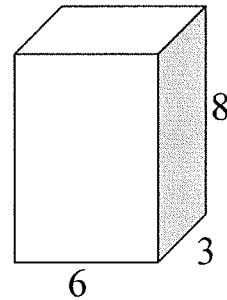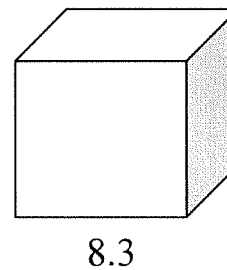
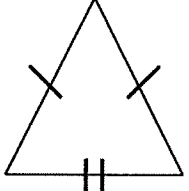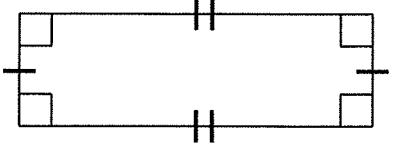Find the volume of each composite shape.
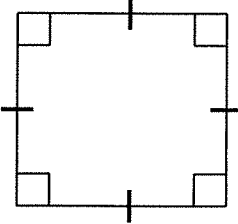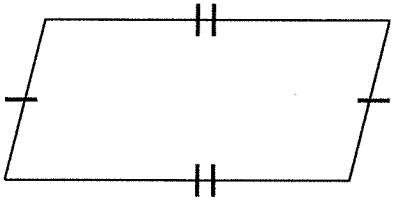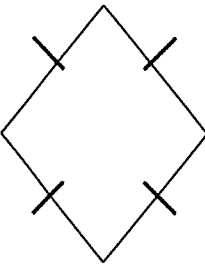
Inches

5
4
7
3
6
14

Feet

6
2
16
16
4
8
20

Centimeters

6
5
8
3
10

Inches

10
10
8
3
4

Inches

10
6
7
8

Feet

12
4
3
10
7

29

MEASUREMENT CONVERSIONS

▷▷▷▷▷▷▷▷▷

How many quarts are in 9 gallons?	How many gallons are in 44 quarts?	How many cups are in 6 pints?
How many feet are in 3.5 yards?	How many centimeters are in 5 ½ meters?	How many quarts are in 2.5 gallons?
How many pints are in 4 quarts?	How many inches are in 2 ¾ yards?	How many centimeters are in 3 ½ meters?
How many meters are in 450 centimeters?	How many yards are in 38 inches?	How many gallons are in 10 quarts?
How many pints are in 4 gallons?	How many pints are in 40 ounces?	How many feet are in 2.4 yards?

30

►►►► CLASSIFYING SHAPES ◄◄◄◄

Is there a difference between a parallelogram and a trapezoid? Either explain in words or draw to prove your answer.	Is a rectangle also a square? Explain.	What shape has two pair of parallel lines? (There could be more than one correct answer).
Draw two regular polygons.	Identify the characteristics of a triangle.	What shape has two pair of parallel lines and four right angles? (There could be more than one correct answer).
Classify the shape below. Use all terms that correctly identify the shape.	Classify the shape below. Use all terms that correctly identify the shape.	Classify the shape below. Use all terms that correctly identify the shape.
Classify the shape below. Use all terms that correctly identify the shape.	Classify the shape below. Use all terms that correctly identify the shape.	Classify the shape below. Use all terms that correctly identify the shape.

31

LINE PLOTS

1. The ages of kids in an art club:

6, 8, 9, 8, 7, 10, 8, 9, 7, 7, 6, 9, 10, 10, 8, 8

← ────────────────────────────────→

2. The height of flowers in a garden:

12, 16, 17, 15, 16, 14, 15, 16, 17, 14, 14, 16, 19, 12, 14, 17

← ────────────────────────────────→

Use the line plot below to answer questions 3 – 5.


```
              ■  ■
           ■  ■  ■        ■
        ■  ■  ■  ■     ■  ■
        ■  ■  ■  ■  ■  ■  ■
←───────────────────────────────→
   40  50  60  70  80  90  100
```
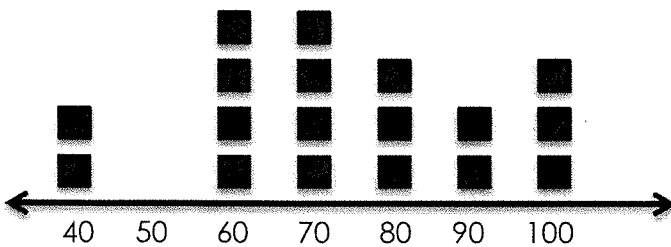
3. The line plot shows test scores for a 10 question quiz. How many students scored higher than 70%?
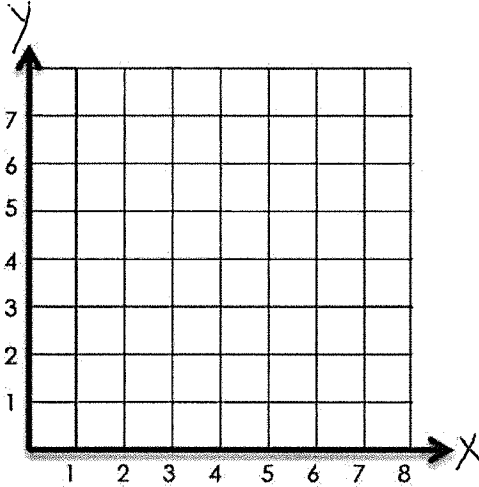
4. How many students got a perfect score?
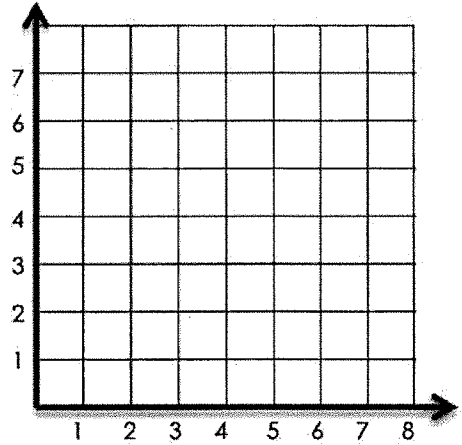
5. How many students scored 60% or lower?

32

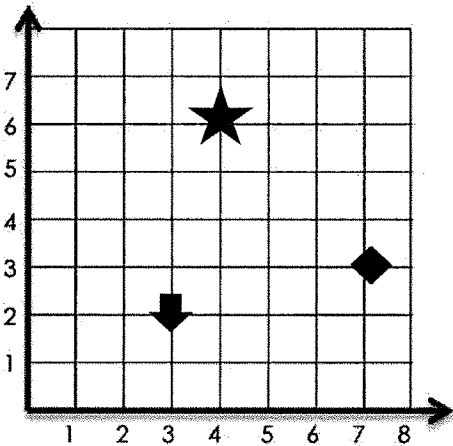# (x, y)
COORDINATE PLANES

Plot the following points.

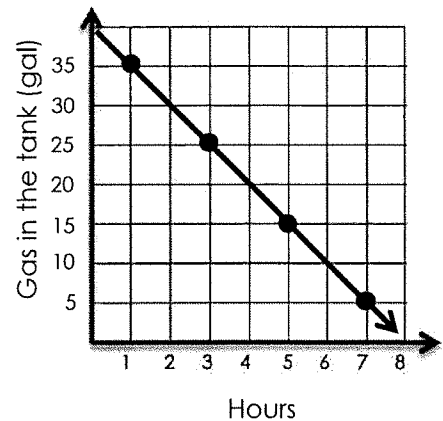(2, 3)
(4, 1)
(6, 3)
(4, 5)

If you start at point (2, 2) and move right 3, then up 5, where do you end up?
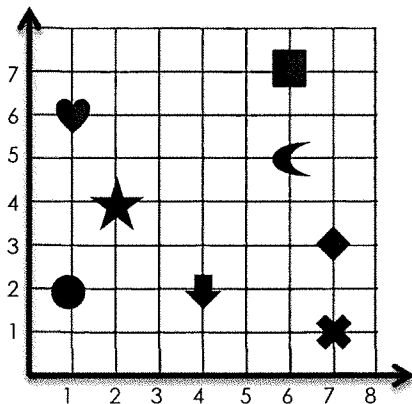
Which shape is closest to the point (2, 5)?

Based on the graph below, how much gas is left in the tank after 4 hours?

Gas in the tank (gal)

Hours

What shape is at (6, 7)?

What are the coordinates of the heart?

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