

SUMMER READING PROGRAM **FOR THE 4TH FORM**

Read a total of 1200 pages.

REQUIRED:

Within this total of 1200 pages, every student has one required book that he or she *must* read.

THIS SUMMER: ALL must read *Robin Hood* by Roger Lancelyn Green. We will be having a book discussion on this book the first week of school in the fall.

(This book can be a part of the 1200 page total. There are copies that can be checked out from 4th form humanities, but must be returned the 2nd day of school.

Fill out the form on the back of this sheet,
listing the books read.

Note: A parental signature is
required.

This form will be collected on the 1st day of school,

Extra credit will be given to those students who
turn the form in on time.

On the second day of school, the form may be
turned in without penalty,
BUT no extra credit points will be offered.

After the first two days of school, summer
reading forms will be counted as "late" with
points being deducted from the student's grade.

How I act when I
get a new book:



Additional books we strongly recommend:

- *Ender's Game*
- *The Scarlet Pimpernel*
- *Jane Eyre*
- *Pride & Prejudice*
- *The Bridge to Terabithia*
- *The Outsiders*
- *Banner in the Sky*
- *The Space Trilogy* by C.S. Lewis

Books can be read via audible or kindle, but we recommend that students have a visual copy of the book to follow along with.

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the form may be turned in without penalty, BUT no extra credit points will be offered.
- After the first two days of school,
summer reading forms will be counted as "late"--w/ points being deducted from the student's grade.

--Summer Reading Pledge and Report: 1200 Pages Total--

I have read the following books this summer:

Title

Author

Number of Pages

1.

2.

3.

4.

5.

6.

7.

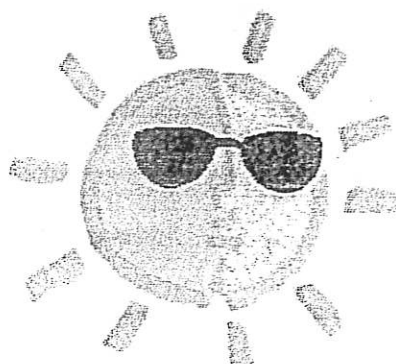
Total number of pages read: _____

Student's Signature: _____

Parent's Signature: _____

Rivendell School

4th Form



Mrs. Johns
Summer Math Packet

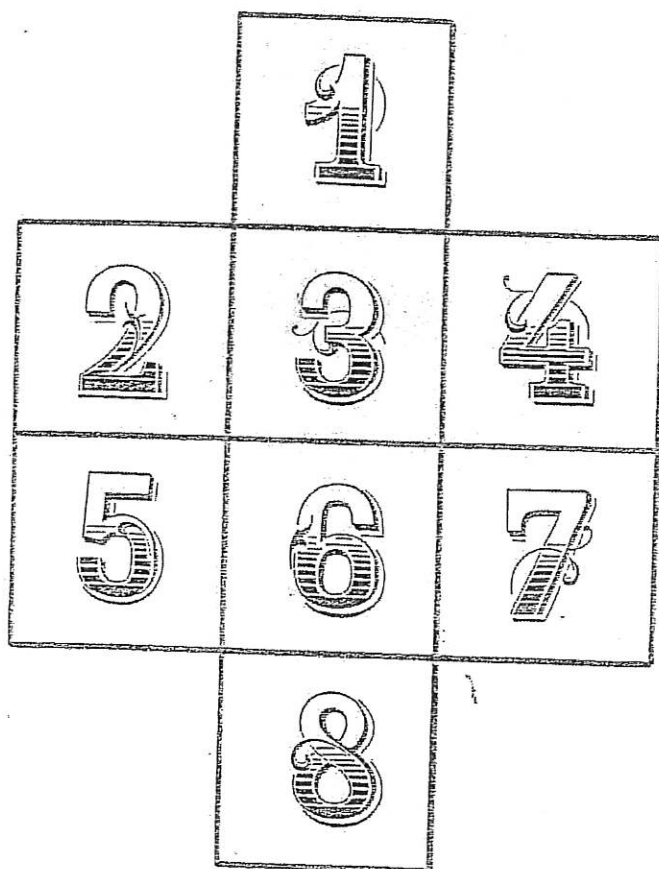
Pre Algebra

(For students entering Algebra in the fall)

Name _____

Contact Info _____

Week One



Here's a great puzzle for all of you neatness freaks. All you have to do is arrange the numbers in the boxes above so that no two consecutive numbers are next to each other (horizontally, vertically, or diagonally).

Monday

In problems 1–12, add or subtract.

$$1 \quad \frac{1}{2} + \frac{3}{8}$$

$$2 \quad \frac{4}{5} - \frac{3}{10}$$

$$3 \quad \frac{2}{5} + \frac{1}{3}$$

$$4 \quad \frac{6}{7} - \frac{5}{8}$$

$$5 \quad \frac{4}{7} - \frac{1}{3}$$

$$6 \quad \frac{2}{9} + \frac{1}{3}$$

$$7 \quad \frac{1}{4} + \frac{3}{8}$$

$$8 \quad \frac{2}{3} + \frac{1}{4}$$

$$9 \quad \frac{2}{3} - \frac{7}{18}$$

$$10 \quad \frac{3}{8} - \frac{1}{6}$$

$$11 \quad \frac{2}{5} + \frac{1}{6}$$

$$12 \quad \frac{1}{2} - \frac{1}{3}$$

In problems 13–15, compare. Use $>$, $<$, or $=$.

$$13 \quad \frac{1}{2} + \frac{5}{6} \bigcirc \frac{2}{5} + \frac{3}{10}$$

$$14 \quad \frac{11}{12} - \frac{7}{8} \bigcirc \frac{5}{6} - \frac{2}{3}$$

$$15 \quad \frac{1}{5} + \frac{1}{2} \bigcirc \frac{10}{12} - \frac{1}{3}$$

In problems 16 and 17, is the statement *true* or *false*?

16 The sum of any two fractions less than $\frac{1}{2}$ is always greater than $\frac{1}{2}$.

17 Fractions with the same denominators are always equivalent.

18 List two fractions with different denominators whose sum is less than $\frac{1}{2}$.

19 List two fractions with different denominators whose difference is less than $\frac{1}{4}$.

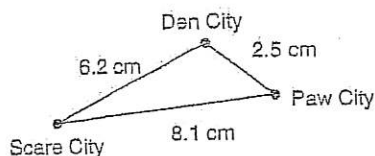
20 At Central High School, a survey showed that $\frac{1}{2}$ of the students in the school drive to school. Another $\frac{1}{3}$ walk to school, and the remaining $\frac{3}{10}$ of the students either bike or take a school bus. What part of the students in the school do not walk to school?

21 The towns of Lydon, Sewall, and Totten are located in a north/south straight line. Sewall is located $\frac{1}{4}$ mile north of Totten, Lydon is south of Totten and $\frac{17}{20}$ mile from Sewall. How far apart are Totten and Lydon?

Tuesday

In problems 1-3, the scale for this map is 1 centimeter : 80 kilometers.
Find the distance between

- 1 Den City and Paw City
- 2 Scare City and Den City
- 3 Paw City and Scare City



- 1 _____
- 2 _____
- 3 _____

In problems 4-6, find the density of a substance with the given mass and volume. $\text{Density} = \frac{\text{mass}}{\text{Volume}}$

4 Mass: 130 g

Volume: 20 cm³

4 _____

5 Volume: 55 in.³

Mass: 22 lb

5 _____

6 Volume: 14.5 m³

Mass: 50.75 kg

6 _____

7 The scale of a model sailboat is 1:42. The mast on the model is 3 inches high. How high, in feet and inches, is the mast of the actual boat?

7 _____

8 There are about 2240 animals in the land of Wundiralis, which covers about 112 square miles. Find the animal population density in Wundiralis.

8 _____

9 Two cities are 240 miles apart. On a map, they are represented by dots 4 inches apart. What is the scale of the map?

9 _____

In problems 10-12, rewrite each map scale as a ratio of numbers.

10 1 in. : 50 mi

10 _____

11 1 cm : 75 km

11 _____

12 $\frac{1}{2}$ in. : 25 ft

12 _____

13 A map has a scale of 1 inch : 100 miles. What distance on the map represents 575 miles?

13 _____

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Wednesday

In problems 1-4, solve each proportion for n .

1 $\frac{3}{5} = \frac{n}{15}$

2 $\frac{2}{7} = \frac{8}{n}$

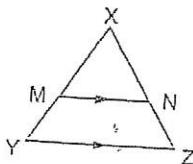
3 $\frac{n}{6} = \frac{6}{9}$

4 $\frac{11}{20} = \frac{n}{50}$

In problems 5 and 6, \overline{MN} is parallel to \overline{YZ} . $MY = 2$ in., and $NZ = 3$ in.
What do you know about similar Δ ?

5 Find MX if $NX = 9$ inches.

6 Find NX if $MX = 9$ inches.



7 A three-inch-by-five-inch postcard was enlarged into a picture that is one foot wide. How long is the picture?

8 In ABC elementary school, the ratio of boys to girls in each grade is 2:3.

a In the second grade there are 50 boys. How many girls are there?

b In the third grade there are 66 girls. How many boys are there?

In problems 9-12, solve each proportion for x .

9 $\frac{3.6}{x} = \frac{5.4}{3}$

10 $\frac{x}{2\frac{1}{2}} = \frac{3\frac{4}{5}}{4\frac{3}{4}}$

11 $\frac{0.0028}{0.49} = \frac{x}{0.7}$

12 $\frac{75\%}{6\%} = \frac{15}{x}$

13 Last season a baseball pitcher threw fastballs and curve balls in the ratio of 5 to 1. This season he throws them in the ratio of 3 to 1.

a For every 90 fastballs the pitcher threw last season, how many curve balls did he throw?

b For every 90 fastballs the pitcher throws this season, how many curve balls does he throw?

c If the pitcher plays in a league in which the batters are good fastball hitters, will his record this year be better or worse than last year?

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8a _____

b _____

9 _____

10 _____

11 _____

12 _____

13a _____

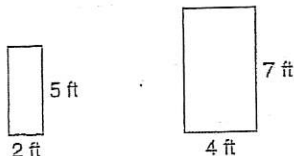
b _____

c _____

Thursday

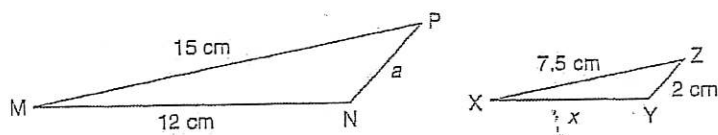
Remember:
~ means "similar"

- 1 Are the two rectangles similar? How can you tell?



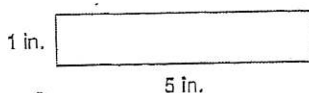
1 _____

- 2 If $\triangle MNP \sim \triangle XYZ$, find the values of x and a .



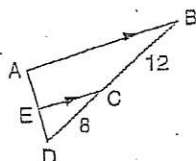
2 _____

- 3 Give the dimensions for two rectangles that would be similar to the rectangle shown.



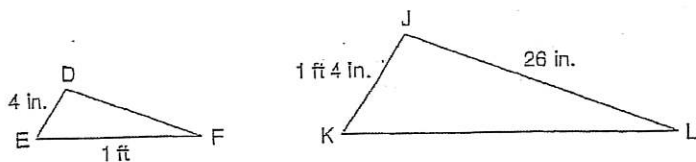
3 _____

- 4 If \overline{EC} is parallel to \overline{AB} , what is the ratio of DE to EA ?



4 _____

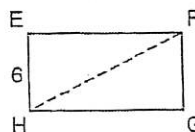
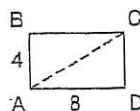
- 5 $\triangle DEF \sim \triangle JKL$. Find DF and KL .



5 _____

- 6 Rectangle ABCD is similar to rectangle HEFG.

- a Find AC to the nearest hundredth.
b Find HF to the nearest hundredth.

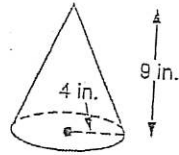


6a _____

b _____

- 7 Recall that the volume of a cone with radius r and height h is equal to $\frac{1}{3}\pi r^2 h$.

- a What is the volume of the cone?
 b If a similar cone has a diameter of 10 inches, what is its height? What is its volume?



- c What is the ratio of the volumes of the cones in parts a and b?

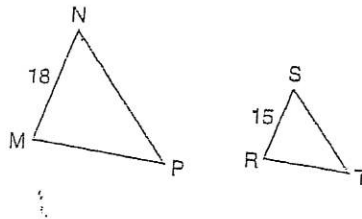
7a _____

b _____

c _____

- 8 $\triangle MNP \sim \triangle RST$, $MN = 18$, and $RS = 15$.

- a If $NP = 20$, what is ST ?
 b If $TR = 10$, what is PM ?



8a _____

b _____

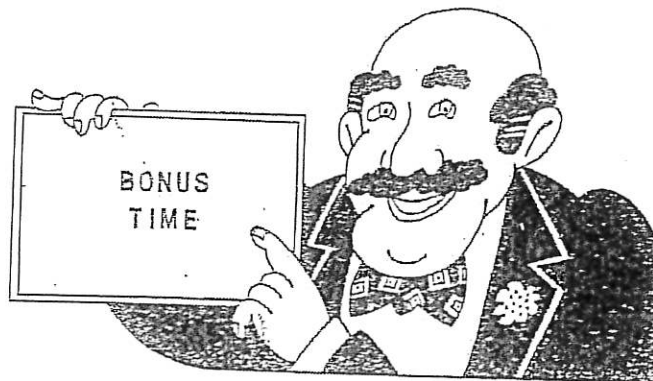
Friday

Ratio Puzzles

In each puzzle, use the total number of tiles and the ratios to determine how many tiles there are of each color. It may be helpful to use tiles.

1	10 tiles	yellow to red — 3:1 red to blue — 1:1	yellow _____ red _____ blue _____
2	21 tiles	blue to green — 3:2 red to yellow — 1:5	blue _____ green _____ red _____ yellow _____
3	31 tiles	red to blue — 4:3 green to yellow — 3:2	red _____ blue _____ green _____ yellow _____
4	13 tiles	blue to red — 5:2 yellow to red — 3:1	blue _____ red _____ yellow _____
5	22 tiles	green to red — 3:2 red to blue — 1:3	green _____ red _____ blue _____
6	21 tiles	red to yellow — 1:1 yellow to blue — 2:3	red _____ yellow _____ blue _____
7	24 tiles	yellow to blue — 5:7 red to green — 1:3	yellow _____ blue _____ red _____ green _____
8	30 tiles	green to blue — 7:2 red to yellow — 1:3	green _____ blue _____ red _____ yellow _____
9	23 tiles	red to yellow — 2:3 yellow to green — 4:1	red _____ yellow _____ green _____

Week Two



A EF HI KLMN

BCD G J OP

It's testing time at the ABC Puzzle and Game Company again. The boss loves to give out bonuses, but you have to solve puzzles to get them. This week's puzzle is worth \$10. Let's see if you earn it. Above and below the line is printed a portion of the alphabet, with some of the letters above the line and some below. Write the remaining letters of the alphabet, placing them correctly either above or below the line according to the boss's hidden scheme.

Monday

In problems 1-7, add or subtract.

$$1 \quad 6\frac{3}{4} \\ - 4\frac{3}{10}$$

$$2 \quad 6\frac{7}{8} \\ + 8\frac{3}{12}$$

$$3 \quad 5\frac{2}{5} \\ - 4\frac{1}{2}$$

$$4 \quad 9\frac{6}{7} + 2\frac{1}{3}$$

$$5 \quad 8\frac{5}{8} - 3\frac{7}{12}$$

$$6 \quad 7\frac{5}{8} + 4\frac{7}{8}$$

$$7 \quad 2\frac{1}{2} - \frac{5}{6}$$

8 Which has the greater perimeter, a square with sides of $5\frac{1}{4}$ or an equilateral triangle with sides of 7?

9 Which has the greater perimeter, a rectangle with length $5\frac{1}{2}$ and width $3\frac{1}{4}$ or a square with an area of 25?

In problems 10 and 11, is the statement *true* or *false*? If false, give an *example* of why the statement is false.

10 The sum of any two mixed numbers is always another mixed number.

11 The difference between any two positive mixed numbers can never be more than either of the two numbers.

12 Find two mixed numbers whose difference is between $3\frac{1}{2}$ and $4\frac{1}{2}$.

13 Find three mixed numbers whose sum is between $10\frac{1}{4}$ and 12.

14 At the beginning of the day, a stock was at a price of 25. During the course of the day, the stock rose by $1\frac{1}{8}$, fell by $\frac{3}{4}$, then rose again by $\frac{3}{8}$. What was the price of the stock at the end of the day?

Remember:

a. Solid endpoint includes that Coord. case
an open endpoint does not.

Tuesday

1 Graph the integers between -2.5 and 5.7.

In problems 2-5, graph each inequality.

2 $x > -2$

3 $x \leq 3$

4 $x \geq 1$

5 $x < -4$

In problems 6-8, write an inequality for each graph.



In problems 9-13, graph each inequality.

9 $x < 1$ or $x \geq 5$

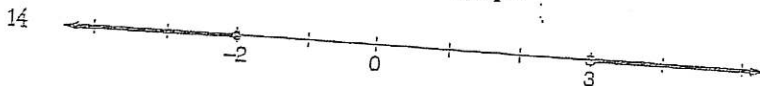
10 $x \geq -3$ and $x \leq 2$

11 $x \leq -3$ or $x > 2$

12 $-2 \leq x < 4$

13 $x > -1$ or $x < 4$

In problems 14-16, write an inequality for each graph.



17 If $A < 5$, $9 < B$, and $A < C$, which inequalities must be true?

a $A < B$

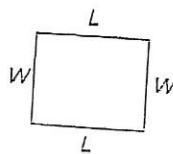
b $C < 5$

c $C < B$

d $B > 5$

e $C > B$

18 The perimeter of the rectangle is less than 26.
Write an inequality for $L + W$.



1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

9 _____

10 _____

11 _____

12 _____

13 _____

14 _____

15 _____

16 _____

17a _____

b _____

c _____

d _____

e _____

18 _____

Wednesday

Graphing Inequalities

Determine what values of x make these mathematical sentences true. Graph your answers on the number lines. Remember: a solid endpoint means that the coordinate is included in the set, and an open endpoint means the coordinate is not included in the set.

1 a $x+3=7$

b $x+3<7$

2 a $x+2=1$

b $x+2>1$

3 a $x+2=-2$

b $x+2\geq-2$

4 a $x+1=0$

b $x+1\leq 0$

5 a $x+3=-1$

b $x+3<-1$

6 a $3=x+1$

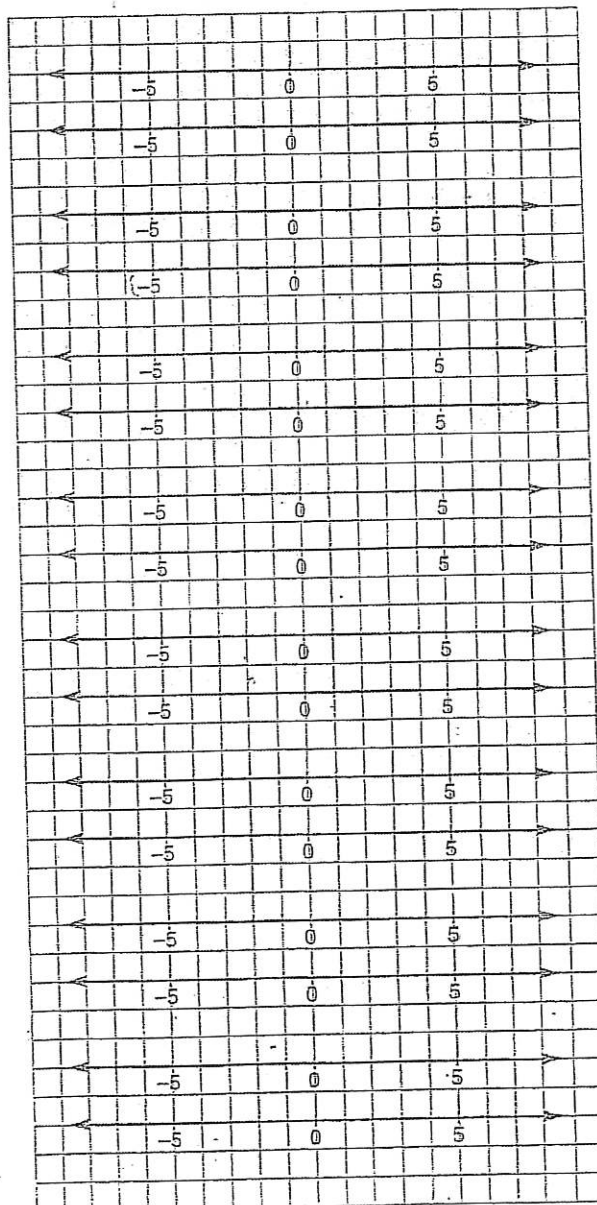
b $3\geq x+1$

7 a $0=x+2$

b $0>x+2$

8 a $-2=x+1$

b $-2<x+1$

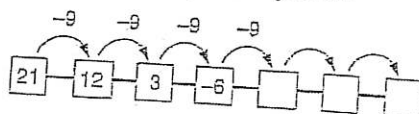


Thursday

Remember:

To add and Subtract Matrices,
add or Subtract Corresponding
entries.

- 1 Find the numbers that will complete the pattern.



In problems 2-5, find each difference.

2 $4 - 9$

3 $-4 - 9$

4 $4 - (-9)$

5 $-4 - (-9)$

- 6 Subtract the matrices.

$$\begin{bmatrix} 4 & -6 \\ -2 & 0 \end{bmatrix} - \begin{bmatrix} 6 & -1 \\ -3 & -4 \end{bmatrix}$$

- 7 Find the distance between these numbers on the number line.

a -6 and 2

b 1 and -10

c -4 and 0

In problems 8-11, solve the equation.

8 $x + 15 = 4$

9 $x - 8 = -2$

10 $x + 5 = -7$

11 $x - 1 = -9$

In problems 12-15, evaluate each expression if $x = 4$, $y = -2$, and $z = -5$.

12 $x - y$

13 $y - z$

14 $x + z - y$

15 $z - y - x$

- 16 Complete the table if $y = 7 - x$.

x	-8	-6	-4	-2	0	2	4	6	8
y									

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7a _____

b _____

c _____

8 _____

9 _____

10 _____

11 _____

12 _____

13 _____

14 _____

15 _____

Friday

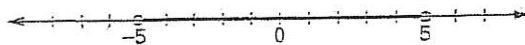
Graphing Inequalities With Absolute Values

Some inequalities involve absolute value — an example is $|x| < 5$. These inequalities can usually be changed into equivalent sentences that use the words and or instead of the absolute value symbol.

The inequality $|x| < 5$, which uses the "less than" symbol, may be written using the word and. Look at the graphs of the two inequalities $|x| < 5$ and $x < 5$ and $x > -5$. The graphs are the same, so the two inequalities have the same solution.

$$|x| < 5$$

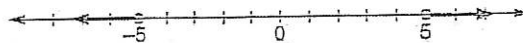
$$x < 5 \text{ and } x > -5$$



An inequality like $|x| > 5$, which uses a "greater than" symbol, may be written using the word or.

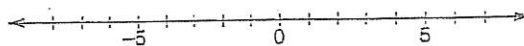
$$|x| > 5$$

$$x > 5 \text{ or } x < -5$$

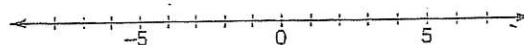


The following inequalities are written with absolute value symbols. Rewrite them as inequalities without absolute value symbols. Graph each solution.

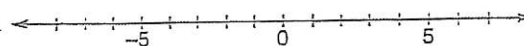
1 $|x| > 3$



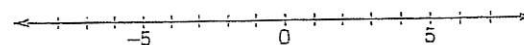
2 $|x| < 3$



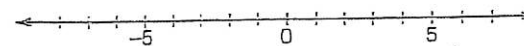
3 $|x+1| < 4$



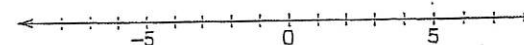
4 $|x-2| < 6$



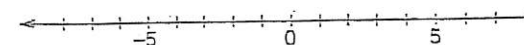
5 $|x+4| > 3$



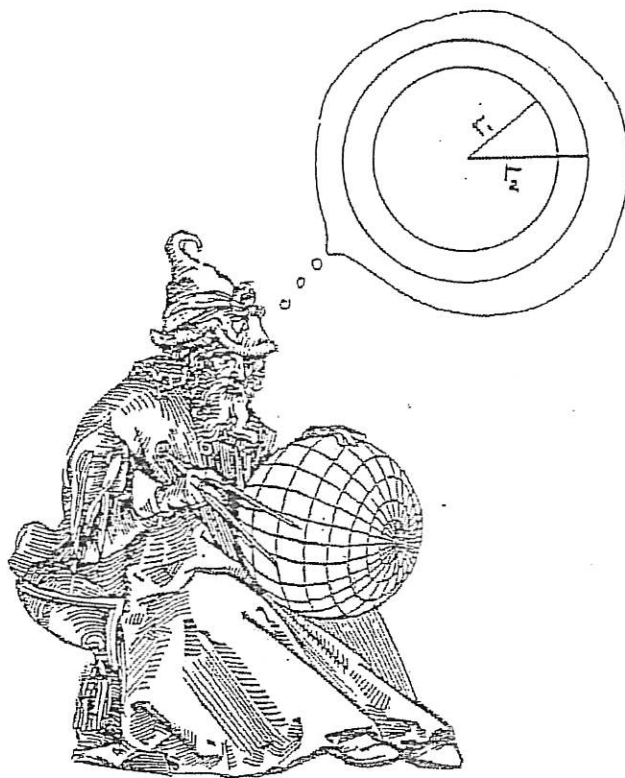
6 $|x-1| \leq 5$



7 $|x+3| \geq 0$



Week Three



The ancient wise man here is working on the old "Steel Band" problem. He put a steel band around the earth at the equator, then cut the band and added ten feet to it. Some magical force now holds the band an equal distance away from the earth. What is this distance? (Assume that the radius of the earth is 4,000 miles and use 3.14 for pi.)

Monday

In problems 1–12, divide.

$$1 \quad \frac{5}{12} \div \frac{5}{7}$$

$$2 \quad 5\frac{3}{5} \div \frac{7}{10}$$

$$3 \quad \frac{3}{4} \div 2\frac{3}{4}$$

$$4 \quad \frac{8}{25} \div 4$$

$$5 \quad 6\frac{2}{5} \div \frac{4}{5}$$

$$6 \quad 5 \div 3\frac{3}{4}$$

$$7 \quad \frac{2}{9} \div \frac{1}{3}$$

$$8 \quad \frac{7}{10} \div \frac{4}{5}$$

$$9 \quad 4 \div \frac{1}{3}$$

$$10 \quad \frac{2}{3} \div \frac{1}{2}$$

$$11 \quad \frac{3}{5} \div \frac{3}{4}$$

$$12 \quad \frac{5}{7} \div \frac{5}{7}$$

In problems 13 and 14, solve for n .

$$13 \quad n = 3\frac{3}{4} \div 150$$

$$14 \quad n = 5\frac{2}{3} \div 4$$

15 What is the length of a rectangular-shaped floor whose area is $99\frac{3}{4} \text{ ft}^2$ and has a width of 9 ft?

In problems 16 and 17, give the next two numbers in the pattern.

$$16 \quad \frac{10}{12}, 1\frac{2}{3}, 3\frac{1}{3}, 6\frac{2}{3}$$

$$17 \quad \frac{1}{2}, 1\frac{1}{2}, 4\frac{1}{2}, 13\frac{1}{2}$$

Tuesday

1 Is the statement *true* or *false*?

- a Angles sharing a side are always adjacent.
- b Angles sharing a vertex and a side are always adjacent.
- c Vertical angles always have the same measure.

1a _____

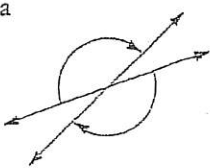
b _____

c _____

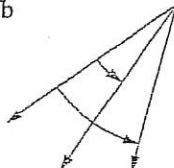
2 Identify the pair of angles marked with arrows as *adjacent angles*, *vertical angles*, or *neither*.

2a _____

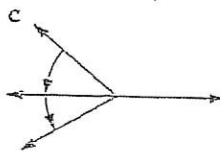
a



b



c



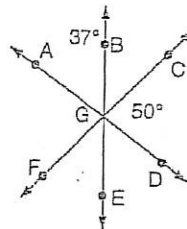
b _____

c _____

3a _____

3 In the diagram $m\angle AGB = 37$ and $m\angle CGD = 50$. What is

- a $m\angle DGE$?
- b $m\angle BGD$?
- c $m\angle BGC$?
- d $m\angle FGE$?



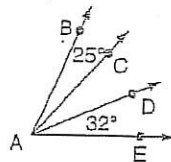
b _____

c _____

d _____

4 If $m\angle BAE = 85$, what is

- a $m\angle CAD$?
- b $m\angle BAD$?
- c $m\angle CAE$?



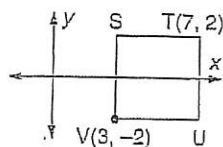
4a _____

b _____

c _____

5 STUV is a square with its sides parallel to the axes. What are the coordinates of points S and U?

5 _____

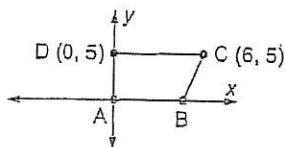


6 What is the measure of the complement of the supplement of a 105° angle?

6 _____

7 List all the pairs of parallel segments and all the pairs of perpendicular segments in polygon ABCD.

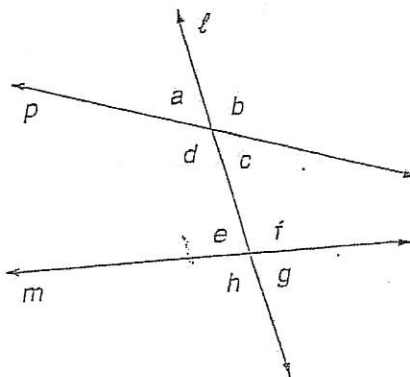
7 _____



Wednesday

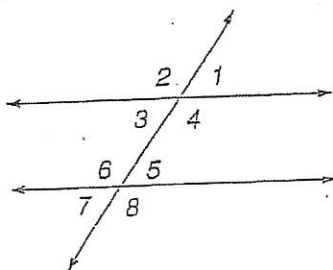
Transversals

A line that intersects two other lines is called a transversal. When a transversal intersects the two lines, eight angles are formed. These angles can be named by their positions. Alternate is used to describe angles on opposite sides of a transversal. Interior refers to angles between the two lines, and exterior refers to angles outside the two lines. In this figure, ℓ is a transversal.



$\angle a$ and $\angle g$ are *alternate exterior angles*. Name another pair of alternate exterior angles. _____
 $\angle d$ and $\angle f$ are *alternate interior angles*. Name another pair of alternate interior angles. _____
 In the upper group of angles, $\angle a$ is above line p and to the left of the transversal. In the lower group, $\angle e$ is in the same position, above line m and to the left of the transversal. $\angle a$ and $\angle e$ are *corresponding angles*. Name three more pairs of corresponding angles. _____

- 1 If a transversal intersects parallel lines, the corresponding angles are congruent. Without using a protractor, determine the measure of each angle if $\angle 1 = 50$.



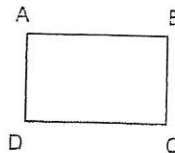
$m\angle 1 =$ _____ $m\angle 5 =$ _____
 $m\angle 2 =$ _____ $m\angle 6 =$ _____
 $m\angle 3 =$ _____ $m\angle 7 =$ _____
 $m\angle 4 =$ _____ $m\angle 8 =$ _____

- 2 Name two pairs of alternate interior angles. _____
- 3 When the lines are parallel, what is true about the measures of alternate interior angles?

- 4 Name two pairs of alternate exterior angles. _____
- 5 When the lines are parallel, what is true about the measures of alternate exterior angles?

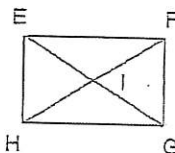
Thursday

- 1 If ABCD is a rectangle and $AC = 20$, what is length BD?



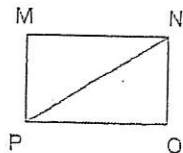
1 _____

- 2 If EFGH is a rectangle and $FH = 12$, what is length EF?



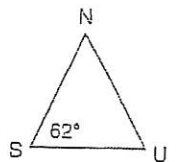
2 _____

- 3 If MNOP is a rectangle with area 12 and $MP = 3$, what is length NP?



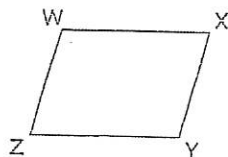
3 _____

- 4 SUN is an isosceles triangle with $\overline{SN} \cong \overline{SU}$ and $m\angle S = 62$. What are $m\angle U$ and $m\angle N$?



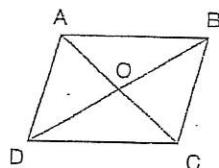
4 _____

- 5 If WXYZ is a parallelogram and $m\angle Z = 45$, what is $m\angle W$?



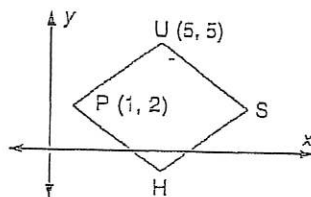
5 _____

- 6 ABCD is a parallelogram. If $AO = 4$ and $BO = 6$, what are lengths OC and OD?



6 _____

- 7 PUSH is a parallelogram with diagonals parallel to the axes. What are the coordinates of points S and H?



7 _____

Friday

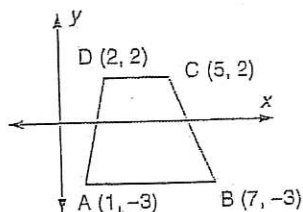
Remember:

In matrix multiplication multiply
Row \times Column. $R1 \times C1, R1 \times C2 \dots$
Add each product.

- 1 a Write a vertex matrix for trapezoid ABCD.
b Multiply the matrix by

$$\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$$

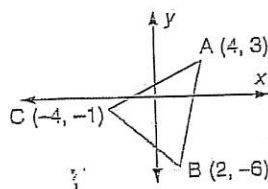
and draw the image represented
by the product.



1a _____

b _____

- 2 Write a vertex matrix for the triangle

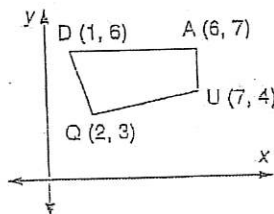


2 _____

- 3 a Write a vertex matrix for QUAD.
b Multiply the matrix by

$$\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$$

and draw the image represented
by the product.



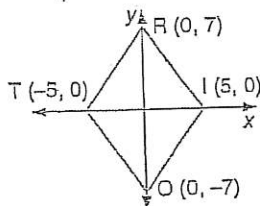
3a _____

b _____

- 4 A triangle has vertices A(1, -2), B(3, 3), and C(0, 4). Use matrix addition to find the coordinates of the vertices of $\triangle A'B'C'$, the image of $\triangle ABC$ after a translation of $\langle -1, 0 \rangle$.

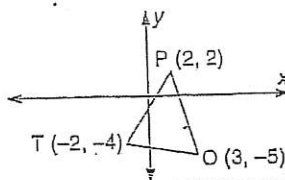
4 _____

- 5 What is the area of quadrilateral RIOT?



5 _____

- 6 a Describe what happens to the x- and y-coordinates of T, O, and P when $\triangle TOP$ is reflected over the y-axis.



6a _____

b Evaluate. $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} -2 & 3 & 2 \\ -4 & -5 & 2 \end{bmatrix}$

b _____

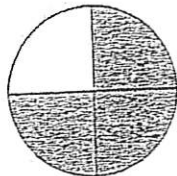
Week Four

A Lilly pad reproduces by doubling. In a pond there is one Lilly pad that doubles the first day. The second day there are four. The third day there are eight and so on...until the 100th day, the pond is completely covered. In how many days will the pond be half covered?

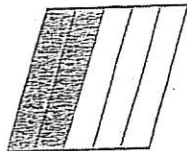
Monday

In problems 1-4, what percent of each figure is shaded?

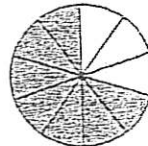
1



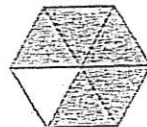
2



3



4

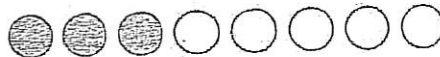


In problems 5 and 6, what percent of the figures in each set are shaded?

5



6



In problems 7-12, write each fraction as a percent.

7 $\frac{1}{5}$
10 $\frac{2}{5}$

8 $\frac{5}{8}$
11 $\frac{3}{40}$

9 $\frac{13}{20}$
12 $\frac{3}{4}$

In problems 13-18, write each percent as a fraction.

13 90%
16 30%

14 6%
17 8%

15 0.2%
18 60%

19 Which fractions are equivalent to 80%?

a $\frac{8}{10}$

b $\frac{8}{100}$

c $\frac{4}{5}$

d $\frac{8}{1}$

20 Which fractions have a percent equivalent that is between 43% and 65%?

a $\frac{4}{9}$

b $\frac{3}{4}$

c $\frac{2}{3}$

d $\frac{5}{8}$

21 Yogi ate 4 of the 6 slices of the pizza. What percent of the pizza did he eat?

Remember:
Combine like Variables
Don't forget to distribute the - sign!

Tuesday

1 Simplify each expression.

a $3x - 5x + x^2 - 6x^2$

c $4x + 5y + 2x + 3y$

e $4(3x + 2y^2) - 2(2x - y^2)$

b $6y + 2xy + 4y + 3y^2$

d $-2(x + y) + 3xy + 2x$

2 Simplify each expression.

a $-\frac{5}{6} + \frac{1}{3}$

b $-\frac{5}{6}x + \frac{1}{3}x$

c $-\frac{5}{6}xy + \frac{1}{3}y^2$

d $4x + 5y$

e $4x^2 - 5y$

f $4x^2 - 5y + 3$

3 Is the statement true or false for the given values of x ?

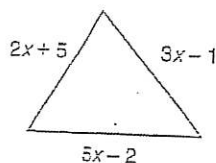
a $2x + 6x = 8x^2$; $x = 0, 1, 2$

b $3x - 6x = -3x^3$; $x = 0, -1, 2$

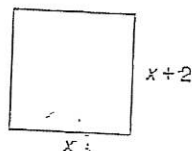
c $4x^2 = -4x$; $x = -1, 1, 2$

4 Write an expression in simplest form to represent

a The perimeter of the triangle



b The area of the rectangle



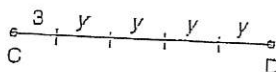
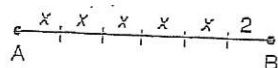
5 Simplify each expression.

a $-\frac{2}{3}x + \frac{1}{6}x$

b $\frac{3}{2}y - \frac{5}{8}y$

c $-\frac{1}{2}(2x + 2y) + 3x$

6 The lengths of line \overline{AB} and \overline{CD} are equal.



a Write an expression for the length of \overline{AB} .

b Write an expression for the length of \overline{CD} .

c If the lengths of \overline{AB} and \overline{CD} are 27, what are the values of x and y ?

d What would be the lengths of \overline{AB} and \overline{CD} if $(x, y) = (2, 3)$?

1a _____

b _____

c _____

d _____

e _____

2a _____

b _____

c _____

d _____

e _____

f _____

3a _____

b _____

c _____

4a _____

b _____

5a _____

b _____

c _____

6a _____

b _____

c _____

d _____

7 Complete the table.

x	-4	-2	0	2	4
$4x - 3 + 5x - 2x + 5$					

8 Match each item in the column on the left with an item on the right.

- | | |
|---------------|--------------|
| a 0 | i $12x$ |
| b $3x + 5x$ | ii $15x$ |
| c $3(5x)$ | iii $3x + 5$ |
| d $3(x + 5)$ | iv $8x$ |
| e $3x + 5$ | v $0x$ |
| f $3(5x - x)$ | vi $3x + 15$ |

9 Without using a calculator or a pencil and paper, evaluate each expression.

- a $83.6 + 83.3 + 83.1$
 b $8.36 + 36.9 - 36.17$
 c $293.77 - 93.77$

7 _____

8a _____

b _____

c _____

d _____

e _____

f _____

9a _____

b _____

c _____

You've seen this before.



Wednesday

Simplifying Expressions With Fractions and Decimals

The procedures used to simplify expressions with integers also apply to expressions with fractions and decimals. Here are two examples.

Example 1

Simplify the expression $\frac{2}{3}x + 2 - \frac{1}{2}x - \frac{1}{4}$.

Solution

$$\text{Group like terms.} \quad \frac{2}{3}x + 2 - \frac{1}{2}x - \frac{1}{4} = \frac{2}{3}x - \frac{1}{2}x + 2 - \frac{1}{4}$$

$$\begin{aligned} \text{Combine like terms.} \quad &= \left(\frac{2}{3} - \frac{1}{2}\right)x + 2 - \frac{1}{4} \\ &= \frac{1}{6}x + \frac{7}{4} \end{aligned}$$

Example 2

Simplify the expression. $2.3(x^2 + x) + 0.7x^2 - 1.3x$

Solution

$$\text{Distribute the multiplication by 2.3.} \quad 2.3(x^2 + x) + 0.7x^2 - 1.3x = 2.3x^2 + 2.3x + 0.7x^2 - 1.3x$$

$$\text{Group like terms.} \quad = 2.3x^2 + 0.7x^2 + 2.3x - 1.3x$$

$$\begin{aligned} \text{Combine like terms.} \quad &= (2.3 + 0.7)x^2 + (2.3 - 1.3)x \\ &= 3x^2 + x \end{aligned}$$

Simplify each expression.

1 $\frac{1}{5}x^2 + \frac{4}{7}xy + \frac{3}{8}x^2 - \frac{1}{4}xy$

2 $\frac{2}{3}x^2 + \frac{1}{2}x - \frac{2}{5}x^2 + \frac{3}{4}x$

3 $6\left(\frac{1}{2}x + 1\right) - 2$

4 $6x + 0.3(0.2x + 4) - 0.01$

5 $\frac{2}{3}\left(\frac{1}{8}x^2 + 6y\right) + \frac{1}{4}(x^2 - 4y)$

6 $0.5y^2 + 3(y^2 + y) + 0.1(y^2 - 3y)$

7 $9.1 + 1.2(7xy - 0.4)$

8 $\frac{5}{6}\left(\frac{2}{5}x^2 + \frac{3}{5}x\right) - \frac{2}{9}x$

9 $\frac{1}{2}x^2 + \frac{3}{4}x + 0.1x^2 - 0.5x$

10 $\frac{2}{7}(x + 3y) + 0.2(4x - y)$

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

9 _____

10 _____

Thursday

Remember:

\parallel means parallel

- 1 Translate each phrase into an algebraic expression.

- a The product of 6 and a number
b The sum of 2 and twice a number
c 2 divided by the sum of 3 and a number

1a _____

b _____

c _____

- 2 Translate each algebraic expression into a phrase.

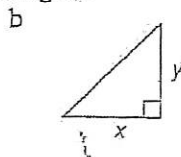
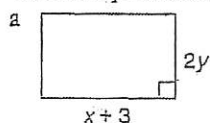
- a $x + 3 = 5$ b $\frac{n}{15}$ c $3x - 2$

2a _____

b _____

c _____

- 3 Write an equation for the area of each figure.



3a _____

b _____

- 4 The temperature is 70° at 1 PM. It starts rising by x degrees per hour. Write an expression for the temperature at the given times that afternoon.

- a 2 PM b 3:30 PM c 5 PM

4a _____

b _____

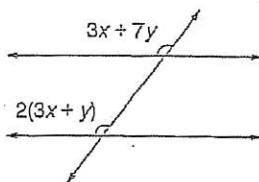
c _____

- 5 Segment AB is equal in length to segment CD. Write an equation to represent this equality.



5 _____

- 6 In the figure, $\ell \parallel m$. Write an equation suggested by the figure.



6 _____

- 7 Chelsea is paid \$5.50 per hour plus 7% commission on her sales.

- a Write an expression for her earnings if she works 5 hours and sells \$250 worth of goods.
b Write an expression for her income if she works x hours and sells y dollars of goods.

7a _____

b _____

- 8 Write an equation to represent that $AB = CD$.



8 _____

Friday

- 1 Solve each equation for y .

a $\sqrt{y} = 6$

b $y^2 = 36$

c $x^2 = 2x^2$

d $x^2 + 16 = 2x^2$

1a _____

b _____

c _____

d _____

- 2 Solve each equation for w .

a $|w| = 2$

b $|w-3| = 6$

c $|w+1| + 2 = 4$

d $|w|-3 = 5$

2a _____

b _____

- 3 Solve each equation for m .

a $4(m-1) = 8$

b $3m^2 = 48$

c $5m + 15 = 12m + 1$

c _____

d _____

- 4 Jill wants to build a rectangular swimming pool with a perimeter of $20\frac{1}{2}$ ft and sides of length x and $(3x+2)$ feet.

a Solve for x .

b What are the dimensions of the pool?

3a _____

- 5 Find the value of a , b , c , and d in the equation.

$$\begin{bmatrix} a-1 & 3 \\ c^2 & d+2 \end{bmatrix} = \begin{bmatrix} 4 & 2b+5 \\ 3c^2 & 2d \end{bmatrix}$$

b _____

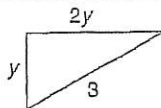
c _____

4a _____

- 6 Use a number line to graph the values of x for which $-|x| = x$.

b _____

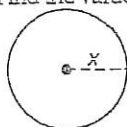
- 7 Find the value of y so that the perimeter of the triangle equals 12.



5 _____

6 _____

- 8 Find the value of x so that the area of the circle is equal to 49π .



7 _____

8 _____

- 9 Solve each equation or simplify each expression.

a $5(4x-9) = 125$

b $2\sqrt{a} - \sqrt{a} + 4$

c $\sqrt{c} + 2 = 6$

d $9x^2 - 3(2x^2 + 1)$

9a _____

b _____

c _____

d _____

Week Five

Grace, Helen, and Mary were discussing their ages one day, and in the course of their conversation they made the following assertions.

Grace: I am twenty-two.
I am two years younger than Helen.
I am a year older than Mary.

Helen: I am not the youngest.
Mary and I are three years apart.
Mary is twenty-five.

Mary: I am younger than Grace.
Grace is twenty three.
Helen is three years older than Grace.

It is of course too much to expect that three young women should be entirely truthful when speaking of their ages, and in the present instance only two of the three statements made by each girl are true.

Can you deduce the age of each one?

Monday

In problems 1-3, what percent of the boxes have X's in them?

1

X	X			X		X	X
			X	X			
	X	X				X	X
X				X	X		

2

X				X
	X		X	
		X		
	X		X	
X				X

3

				X	
					X
X		X		X	
	X		X		X
X		X		X	

In problems 4-7, find the percent.

4 6 is what percent of 20?

5 30 is what percent of 25?

6 What percent of 80 is 2?

7 What percent of 40 is 40?

In problems 8-10, compare a and b. Which represents the greater percent?

8 a the percent 10 is of 15

b the percent 12 is of 36

9 a the percent 10 is of 8

b the percent 20 is of 30

10 a the percent 40 is of 50

b the percent 70 is of 90

11 If a is 40% of b , what are some possible values for a and b ?

12 If x is 150% of z , what are some possible values for x and z ?

13 The Food and Drug Administration suggests eating 52 grams of protein each day. Ernie eats 130 grams of protein daily. What percent of the recommended amount of protein does Ernie eat?

14 Mrs. Parks sold \$850 worth of cookies today. She also collected a total of \$59.50 in sales tax. What tax rate did she use?

Tuesday

Expressions and Equations With Money

When working with problems involving money, special attention must be given to the units. When coins are involved, the value of the coins often must be specified. For example, n dimes has the value $10n$ cents or $0.1n$ dollars. In all equations involving money, the values must be expressed in the same unit, either in cents or in dollars.

Write an expression for the value of the following coins, first in cents, then in dollars.

	Expression	Value in Cents	Value in Dollars
	x nickels	$5x$	$0.05x$
1	x pennies	_____	_____
2	x dimes	_____	_____
3	x quarters	_____	_____
4	x dollars	_____	_____
5	$x - 1$ nickels	_____	_____
6	$x + 4$ dimes	_____	_____
7	x dimes and $x - 1$ quarters	_____	_____
8	x dollars and x nickels	_____	_____
9	$x - 2$ quarters and x pennies	_____	_____
10	x nickels and $x + 3$ pennies	_____	_____

Write and solve an equation for each problem.

- Elizabeth has a handful of coins totaling \$1.45. She has several quarters and one fewer nickel than quarters. How many of each kind of coin does she have?
- A coin bag contained \$6.70. There were twenty more pennies than quarters, nine more dimes than quarters, and four nickels. How many quarters, dimes, and pennies did the bag contain?
- Sarah received \$2.03 in change from her five-dollar bill when she bought snack bars at 27 cents each. How many snack bars did she buy?
- There were four stacks of coins on a desk. The stack of pennies had four more coins than the stack of nickels. The stack of dimes had two fewer coins than the stack of nickels, and the stack of quarters had one fewer coin than the stack of nickels. The coins had a value of \$6.15. How many of each kind of coin were there?

Wednesday

Remember:

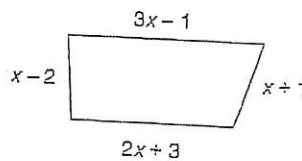
When you \times or \div an inequality by a neg. number, the inequality reverses.
 $<$ to $>$.

- 1 Solve each inequality. Graph the solution on a number line.
 a $2x + 14 > 6$ b $12 - 3x \leq -6$
 c $0 \geq x + 2$ d $5x - 4 \leq 2x + 11$

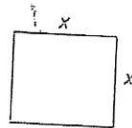
- 2 Find the largest integer that solves each inequality.
 a $7x \leq 28$ b $x - 2 \geq 2x + 8$
 c $5(x - 2) \leq 0$

- 3 The perimeter of the quadrilateral is less than 50.

- a Write an inequality to describe the figure.
 b Solve for x .

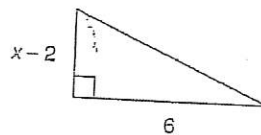


- 4 The area of the square is at least 81.
 Write an inequality to represent this.
 Solve the inequality for x .



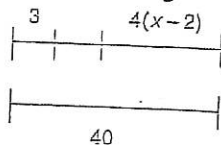
- 5 The mean of 3, x , 0, and 5 is less than $x - 1$.
 a Write an inequality to represent this.
 b Solve the inequality for x .

- 6 The area of the triangle is greater than 10.
 Find the possible values of x .



- 7 Don works at least 5 hours at 10 dollars per hour. If x is the amount of money he earns, write an inequality for x .

- 8 Refer to the drawing.



- a Write an inequality to describe the figure.
 b Solve for x .
 c Graph the solutions for x on a number line.

1a _____

b _____

c _____

d _____

2a _____

b _____

c _____

3a _____

b _____

4 _____

5a _____

b _____

6 _____

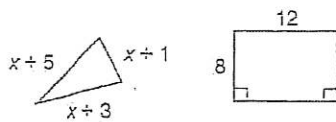
7 _____

8a _____

b _____

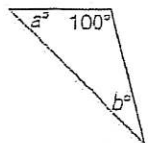
c _____

- 9 The perimeter of the triangle is 50% of the perimeter of the rectangle. Find the value of x .



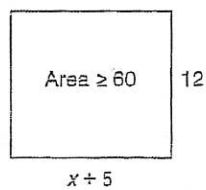
9 _____

- 10 If $20^\circ \leq b \leq 30^\circ$, what is the range of a ?



10 _____

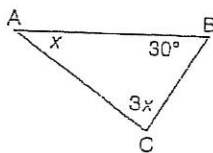
- 11 Find the value(s) of x .



11 _____

Thursday

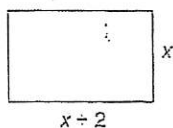
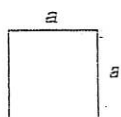
- 1 Find the value of y if $x = -3$ and $6x - y = 0$.
- 2 Find the value of x and y if
 - a $3x + 2 = y$ and $y = x - 2$
 - b $5x - 4 = y + 2$ and $2y = x - 3$
 - c $x = 2$ and $y = 5x + 2$
- 3 Find two numbers that have a ratio of 4:5 and a sum of 27.
- 4 The angles of a triangle are in the ratio 1:2:3. Find their measures.
- 5 Solve each equation for x .
 - a $3(x - 1) + 2(x - 1) = 20$
 - b $-3(x - 2) + x - 2 = 2x$
 - c $7(x + 3) + 4(x + 3) = 33$
- 6 Which of the following can be substituted for 75%?
 - a $\frac{75}{100}$
 - b 0.0075
 - c 0.75%
 - d $\frac{3}{4}$
 - e 0.75
 - f $\frac{75}{1000}$
- 7 Two supplementary angles have a ratio of 1:2. Find the measure of the smaller angle.
- 8 The lengths of segments MN and NP have the ratio $MN:NP = 5:3$ and $MP = 72$. Find the length of segment MN .
- 9 In $\triangle ABC$, $m\angle B = 30$. The ratio of $\angle C$ to $\angle A$ is 3:1. Find the measure of $\angle C$.
- 10 Simplify the expression or solve the equation or inequality.
 - a $3(x - 1) + 1$
 - b $3(x - 1) + 1 = 4$
 - c $8(r + 3r)$
 - d $8 \leq r + 3r$



- 1 _____
- 2a _____
- b _____
- c _____
- 3 _____
- 4 _____
- 5a _____
- b _____
- c _____
- 6a _____
- b _____
- c _____
- d _____
- e _____
- f _____
- 7 _____
- 8 _____
- 9 _____
- 10a _____
- b _____
- c _____
- d _____

Friday

- 1 Use the function $f(x) = 5x^2 - 1$ and find
 - a $f(0)$
 - b $f(1)$
 - c $f(-3)$
- 2 Evaluate the function $g(x, y) = 3x - 2y$ for each of the following values.
 - a $g(0, 1)$
 - b $g(-1, 2)$
 - c $g(2, 0)$
- 3 Hi Jumper makes x three-point field goals, y two-point field goals, and z one-point free throws in a basketball game. Write a function P for the total number of points he makes in the game.
- 4 If $f(2x - 1) = 2x$, find $f(7)$.
- 5 Find the amount of interest earned if \$5000 is invested for one year at 7% simple interest.
- 6 If $f(x) = 3x^2 - 1$ and $g(x) = 2x^2 + 3$, find x when $f(x) = g(x)$.
- 7 Write a function for the perimeter of each figure.
 - a Square
 - b Rectangle



1a _____

b _____

c _____

2a _____

b _____

c _____

3 _____

4 _____

5 _____

6 _____

7a _____

b _____

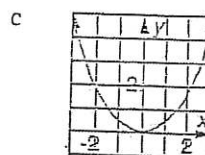
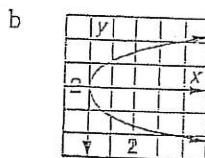
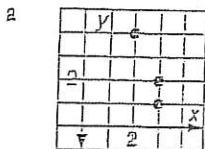
Graphs of Functions

A function is a relationship in which each input value is paired with exactly one output value. To determine whether a graph represents a function in which each input value x is paired with exactly one output value $f(x)$, or y , imagine a vertical line moving along the graph. If the vertical line intersects the graph in exactly one point, the graph represents a relationship in which $f(x)$, or y , is a function of x . This is known as the vertical line test.

Example

*Remember this next year
in Algebra!*

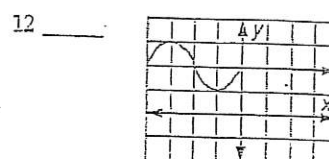
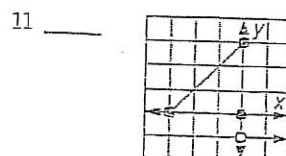
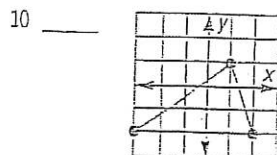
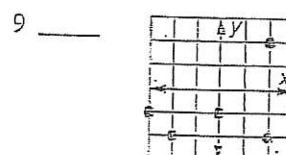
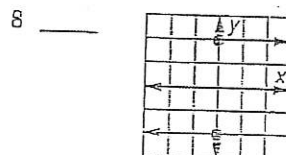
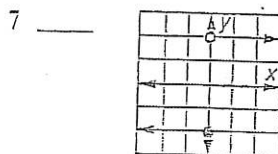
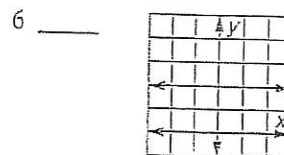
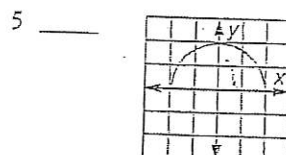
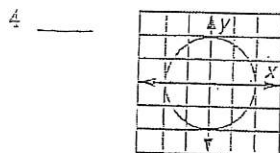
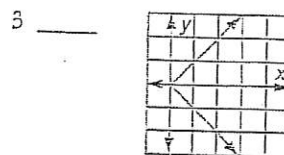
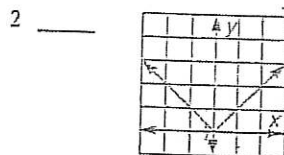
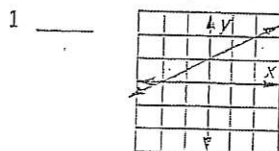
Determine whether each graph represents a relationship in which y is a function of x .



Solution

- a No. A vertical line drawn through $x = 3$ crosses two points of the graph.
- b No. A vertical line drawn through any x value greater than 1 crosses the graph in two points.
- c Yes. No vertical line will cross the graph in more than one point.

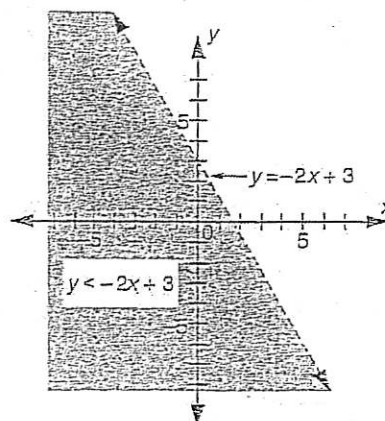
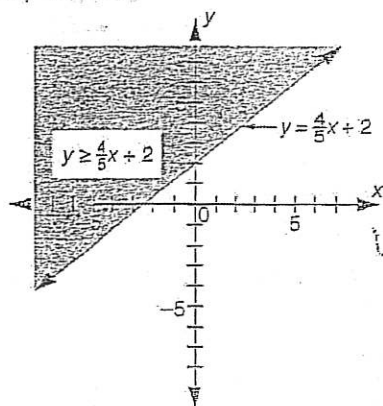
Use the vertical line test to determine if each graph represents a relationship in which y is a function of x . If it is not, draw a vertical line that crosses two points of the graph.



Week Six

Graphing Inequalities

You have used graphs to represent equations. You can also use graphs to represent inequalities. For example, the graph below at the left represents the inequality $y \geq \frac{4}{5}x + 2$, and the graph below at the right represents $y < -2x + 3$.



In the graph at the left, the boundary line $y = \frac{4}{5}x + 2$ is solid, because the inequality symbol is \geq . A solid boundary line means the boundary is included in the shaded region. At the right, the boundary line $y = -2x + 3$ is broken, because the inequality symbol is $<$. A broken boundary line means the boundary is not included in the shaded region.

- 1 In the graph for $y \geq \frac{4}{5}x + 2$, why is the shaded region above the boundary line?

- 2 In the graph for $y < -2x + 3$, why is the shaded region below the boundary line?

- 3 On graph paper, show the inequality $y > -\frac{2}{3}x - 5$. (Start by lightly drawing the boundary line $y = -\frac{2}{3}x - 5$. Then decide whether the boundary line should be solid or broken, and which side of the boundary line should be shaded.)

- 4 On graph paper, show the inequality $y \leq -\frac{5}{3}x + 1$.

- 5 Here are two inequalities.

$$y \geq x + 3$$

$$y \leq -\frac{2}{3}x + 1$$

Show both inequalities on the same graph, and indicate all the points that satisfy both conditions.

Monday

In problems 1-4, find the number.

1 15% of what number is 8?

2 9 is 25% of what number?

3 4% of what number is 3?

4 150% of what number is 52.5?

5 Which is greater, x or y , if 25% of x is 16 and 12% of y is 24?

In problems 6-8, the chart shows how Dale has budgeted his money based on a weekly salary from his job after school.

6 How much does Dale earn each week?

7 How much money of his weekly salary does Dale have budgeted for clothing?

8 How much money of his weekly salary does Dale put into savings?

Dale's Weekly Budget		
Purpose	% of total	Amount
Food	25	\$22.50
Savings	20	?
Entertainment	15	\$13.50
Clothes	40	?

9 Cindi received a commission of \$250 last week. What was the total amount she sold if she earns 4% commission?

10 Super Slugger got hits in 35% of his at-bats. He got 210 hits. How many at-bats did he have?

11 Max is taxed on his income at a rate of $33\frac{1}{3}\%$. If he paid \$18,000 in taxes, what were his total earnings?

12 The total cost of a pair of boots, including 7% sales tax, is \$69.55. What was the selling price of the boots before tax?

Remember:

Coefficient is the number in front of the variable.

→ 7x

Tuesday

- 1 Solve each equation for x

1a _____

a $\frac{3x+6}{6} = \frac{4x-2}{3}$

b $\frac{5x+3}{2} = \frac{7x-2}{3}$

1b _____

- 2 If $3x + 2y = 2(x - y) + 9$ and $y = 2$, what is the value of x ?

2 _____

- 3 Copy the following steps, filling in the missing coefficients and constants, to solve $35 + 5z = 9z - 21$ for z .

3 _____

Step 1 $35 + 5z + \underline{\hspace{1cm}}z = 9z - 21 + \underline{\hspace{1cm}}z$

Step 2 $\underline{\hspace{1cm}} = 4z - 21$

Step 3 $\underline{\hspace{1cm}} + \underline{\hspace{1cm}} = 4z - 21 + \underline{\hspace{1cm}}$

$\underline{\hspace{1cm}} = 4z$

$\underline{\hspace{1cm}} = z$

- 4 Solve the proportion $\frac{4x+5}{7x-2} = \frac{3}{5}$ for x .

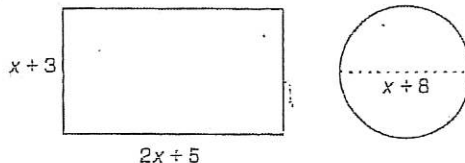
4 _____

- 5 The perimeter of a rectangle with sides $3x$ and $2x$ is equal to the perimeter of an equilateral triangle with a side length $2x + 3$. Solve for x .

5 _____

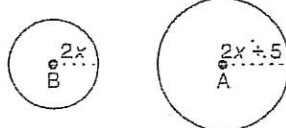
- 6 The perimeter of the rectangle equals the circumference of the circle. Find the radius of the circle.

6 _____



- 7 The circumference of circle A is two and one-third times the circumference of circle B. Find the diameters of the circles.

7 _____



- 8 The Fix-it-Fast Business Parts Store charges \$60 service fee per visit plus \$60 per hour. Maxwell charges \$120 service fee plus \$40 per hour for the same job. Is it cheaper to hire Fix-it-Fast? How long must a job take for it to be cheaper to hire Fix-it-Fast?

8 _____

- 9 A stream is flowing at 5 miles per hour. A motorboat can go 70 miles downstream in 2 hours. It takes 2.8 hours for the boat to return upstream to its starting place. How fast does the boat travel in still water?

9 _____

Wednesday

1 A cassette tape costs \$9.51, which includes a 7.5% tax. What is the pre-tax price for the tape? (Round your answer to the nearest cent.)

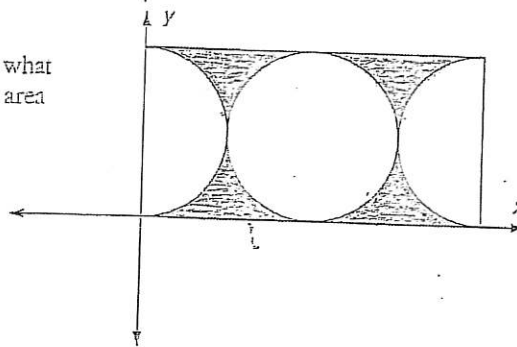
1 _____

2 The edge of each cube is 3 inches. If each cube weighs 1.5 ounces per cubic inch, how many pounds will 500 cubes weigh?

2 _____

3 The shaded area is what percent of the total area of the rectangle?

3 _____



4 Machine A produces 8 bolts per minute. Machine B produces 10 bolts per minute. On a given day, machine A started at 9 AM and machine B started at 10 AM. Machine A was shut down at 6 PM.

a When would machine B need to shut down in order to produce the same number of bolts as machine A?

4a _____

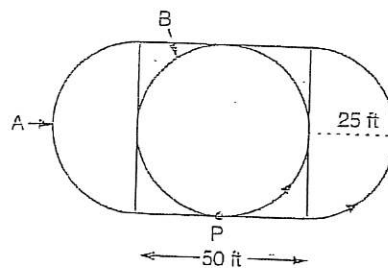
b If both machines shut down at 4 PM, what was the total number of bolts produced for the day?

4b _____

5 A pile contains 1200 coins. Each day Penny Nichols takes 20% of the coins from the pile. Approximately how many coins remain in the pile after 7 days?

5 _____

6 Art walked counterclockwise around track A beginning at point P. When returning to point P he walks around circle B. How far has he walked when he again returns to point P?



6 _____

7 Donna invested two sums of money totaling \$9,000. They earn 8% and 10%, respectively. Find the two amounts if the two investments earned the same amount of interest in a year.

7 _____

Thursday

1 If $f(x, y) = 2x + 5y$, what is

- a $f(2, 3)$?
- b $f(3, 2)$?
- c $f(-1, 1)$?
- d $f(1, -1)$?
- e $f(2, -2)$?
- f $f(-2, 2)$?

1a _____

b _____

c _____

d _____

e _____

f _____

2 Anne weighs 90 pounds and sits on a teeter board 4 feet from the fulcrum. If Kersten sits 6 feet from the fulcrum to balance the board, find how much Kersten weighs.

2 _____

3 Peter has some dimes and quarters. He has 8 more quarters than dimes. The total value of his coins is \$9.70. How many dimes does he have?

3 _____

4 The length of a rectangle is four times its width. The perimeter of the rectangle is 240. Find its length.

4 _____

5 Admission for a football game is \$5 for adults and \$3.50 for children. Raul spent \$24 on tickets. How many tickets of each type did he buy?

5 _____

6 The perimeter of an isosceles trapezoid is 53 centimeters. The length of the longer base is 3 inches greater than the length of the shorter base. The length of the shorter base is 5 inches greater than either leg. What is the length of the shorter base?

6 _____

7 If $G(x, y) = 2x + 3y$ and $x = y - 3$, find $G(x, y)$ for

7a _____

a $y = 0$

b _____

b $y = 2$

c _____

c $y = -1$

d _____

d $y = x$

8 _____

8 Julia bought 15 stamps at 29¢ each and 8 stamps at 21¢ each. How much did Julia pay for the stamps?

Friday

- 1 Graph the two equations $y = 2x - 1$ and $y = -2x + 5$. Use the graphs to solve the equation $2x = -2x + 6$.

1 _____

- 2 For the equation $y = 4 - 2x + x^2$,

2a _____

a Find the values of y when $x = 0, 1, 2$, and 3 .

b _____

b What value of x gives the least value of y ?

- 3 A rock is tossed into the air with an initial velocity of 48 feet per second. The height-versus-time equation is $h = -16t^2 + 48t + 28$.

3a _____

a What is the maximum height the rock will reach?

b After how many seconds will it hit the ground?

b _____

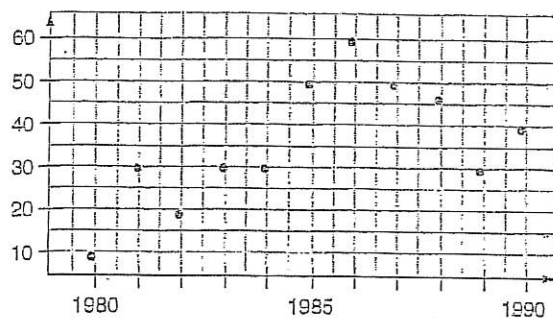
- 4 Graph the two equations $y = 3^x$ and $y = 3x + 3$.

a Use the graph to solve the equation $3^x = 3x + 3$ for positive values of x .

b Verify the result by substituting this value of x into the equation.

- 5 A small company's profit for the years 1980 through 1990 are shown on the graph.

5a _____



b _____

a Between what years were the profits declining?

b In what year were the profits at an all-time high?

Answers

Week One

Question of the Week:

	2	
6	8	5
4	1	3
	7	

Monday

- 1 $\frac{7}{8}$
- 2 $\frac{1}{2}$
- 3 $\frac{11}{15}$
- 4 $\frac{13}{50}$
- 5 $\frac{55}{21}$
- 6 $\frac{5}{9}$
- 7 $\frac{5}{8}$
- 8 $\frac{11}{12}$
- 9 $\frac{5}{18}$
- 10 $\frac{5}{24}$
- 11 $\frac{17}{50}$
- 12 $\frac{1}{6}$
- 13 $>$
- 14 $<$
- 15 $>$
- 16 False
- 17 False
- 18 Possible answer: $\frac{1}{4} + \frac{1}{8} = \frac{3}{8}$
- 19 Possible answer: $\frac{2}{5} - \frac{3}{10} = \frac{1}{10}$
- 20 $\frac{4}{5}$
- 21 $\frac{3}{5}$ mile

Tuesday

- 1 200 km
- 2 496 km
- 3 648 km
- 4 6.5 g/cm³
- 5 0.4 lb/in.³
- 6 3.5 kg/m³
- 7 10 ft 6 in.
- 8 20 animals/mi²
- 9 1 inch : 60 miles
- 10 1.3, 168,000
- 11 1.7, 500,000
- 12 1:600
- 13 $5\frac{3}{4}$ inches

Thursday

- 1 No: Ratios of corresponding sides are not equal.
- 2 $x = 6$; $a = 4$
- 3 Possible answers: 2 in. \times 10 in., 3 in. \times 15 in.
- 4 $\frac{2}{3}$
- 5 DF = 6.5 in.; KL = 4 ft
- 6a 8.94
- b 13.41
- 7a $48\pi \text{ in.}^3 \approx 150.80 \text{ in.}^3$
- b $11.25 \text{ in.}; 93.75\pi \text{ in.}^3 \approx 294.52 \text{ in.}^3$
- c 64:125
- 8a $16\frac{2}{3}$
- b 12

Wednesday

- 1 $n = 9$
- 2 $n = 28$
- 3 $n = 4$
- 4 $n = 27.5$
- 5 6 in.
- 6 13.5 in.
- 7 20 in.
- 8a 75
- b 44
- 9 $x = 2$
- 10 $x = 2$
- 11 $x = 0.004$
- 12 $x = 1.2$
- 13a 18
- b 30
- c Better

Friday

- 1 yellow : red : blue = 6:2:2
- 2 blue : green : red : yellow = 9:6:1:5
- 3 red : blue : green : yellow = 12:9:6:4
- 4 blue : red : yellow = 5:2:6
- 5 green : red : blue = 6:4:12
- 6 red : yellow : blue = 6:6:9
- 7 yellow : blue : red : green = 5:7:3:9
- 8 green : blue : red : yellow = 14:4:3:9
- 9 red : yellow : green = 8:12:3

Week Two

Question of the Week:

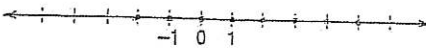
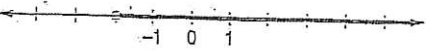
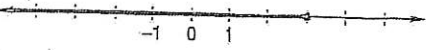
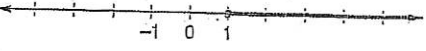
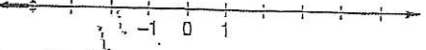
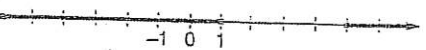
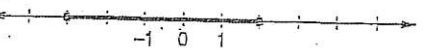
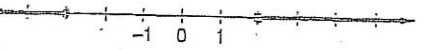

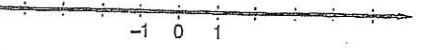
Monday

- 1 $2\frac{3}{20}$
- 2 $15\frac{7}{24}$
- 3 $\frac{9}{10}$
- 4 $12\frac{4}{21}$
- 5 $5\frac{1}{4}$
- 6 $12\frac{1}{2}$
- 7 $1\frac{2}{3}$
- 8 Neither—the perimeters are equal
- 9 The square
- 10 False; Possible answer: $2\frac{1}{2} + 1\frac{1}{2} = 4$
- 11 True
- 12 Possible answer: $11\frac{1}{2} - \frac{3}{4} = 11\frac{1}{4}$
- 13 Possible answer: $3\frac{2}{3} \div 3\frac{2}{3} + 3\frac{2}{3} = 11$
- 14 $25\frac{3}{4}$

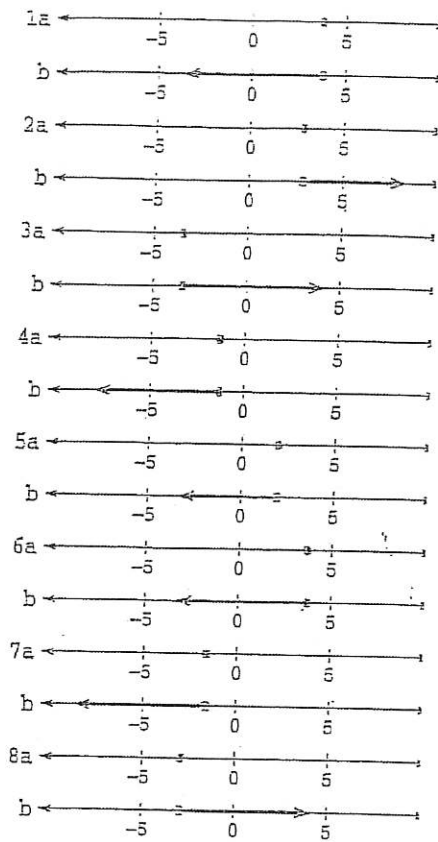
A EF HI KLMN T VWXYZ
BCD G J OPQRS U

All the letters made with straight lines are above the line while the letters made with curved lines are below the line. Now, everyone entitled to a bonus take two steps forward.

Tuesday

- 1 
- 2 
- 3 
- 4 
- 5 
- 6 $x > -1$
- 7 $x \leq 5$
- 8 $x < 0$
- 9 
- 10 
- 11 
- 12 
- 13 
- 14 $x \leq -2$ or $x > 3$
- 15 $-1 \leq x \leq 5$
- 16 $x < 2$
- 17 a and d
- 18 $0 < L + W < 13$

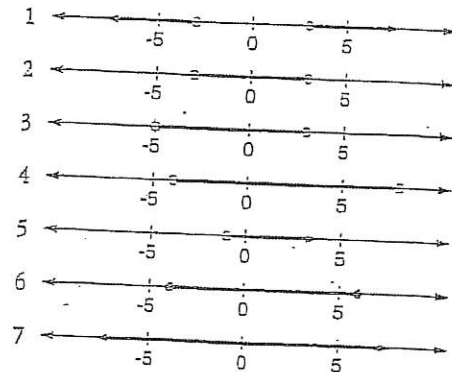
Wednesday



Thursday

- 1 -15, -24, -33
- 2 -5
- 3 -13
- 4 13
- 5 5
- 6 $\begin{bmatrix} -2 & -5 \\ 1 & 4 \end{bmatrix}$
- 7 a 8
b 11
c 4
- 8 $x = -11$
- 9 $x = 6$
- 10 $x = -12$
- 11 $x = -8$
- 12 6
- 13 3
- 14 1
- 15 -7
- 16 15; 13; 11; 9; 7; 5; 3; 1; -1

Friday



Week Three

Question of the Week:

In the following equations C = circumference; r = radius; and $\pi = 3.14$ (r_1 is the radius of the earth; r_2 is the radius of the steel band):

$$C = 2\pi r_1 \quad C + 10 = 2\pi r_2$$

$$r_1 = \frac{C}{2\pi} \quad r_2 = \frac{C+10}{2\pi}$$

$$r_1 = 4,000 \quad r_2 - r_1 = \frac{C+10}{2\pi} - \frac{C}{2\pi} = \frac{10}{2\pi} = \frac{5}{\pi}$$

$$r_2 - r_1 = 1.59 \text{ FEET}$$

Monday

- 1 $\frac{7}{12}$
- 2 8
- 3 $\frac{3}{11}$
- 4 $\frac{2}{25}$
- 5 8
- 6 $1\frac{1}{3}$
- 7 $\frac{2}{3}$
- 8 $\frac{7}{8}$
- 9 12
- 10 $1\frac{1}{3}$
- 11 $\frac{4}{5}$
- 12 1
- 13 $n = \frac{1}{40}$
- 14 $n = 1\frac{5}{12}$
- 15 $11\frac{1}{12}$ ft
- 16 $13\frac{1}{2}, 26\frac{2}{3}$
- 17 $40\frac{1}{2}, 121\frac{1}{2}$

Tuesday

- 1a False
- b False
- c True
- 2a Vertical
- b Neither
- c Adjacent
- 3a 37°
- b 143°
- c 93°
- d 93°
- 4a 28°
- b 53°
- c 60°
- 5 $S(3, 2); U(7, -2)$
- 6 15°
- 7 Parallel: \overline{AB} and \overline{CD} ; Perpendicular: \overline{AD} and $\overline{AB}, \overline{AD}$ and \overline{CD}

Wednesday

Alternate exterior angles: b and h

Alternate interior angles: c and e

Corresponding angles: d and h, b and f, c and g

- 1 $m\angle 1 = 50$ $m\angle 5 = 50$
 $m\angle 2 = 130$ $m\angle 6 = 130$
 $m\angle 3 = 50$ $m\angle 7 = 50$
 $m\angle 4 = 130$ $m\angle 8 = 130$
- 2 Alternate exterior angles: 3 and 5, 4 and 6
- 3 If two parallel lines are cut by a transversal, the measures of the alternate interior angles are equal.
- 4 Alternate exterior angles: 2 and 8, 1 and 7
- 5 If two parallel lines are cut by a transversal, the measures of the alternate exterior angles are equal.

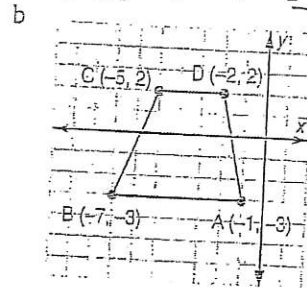
Thursday

- 1 20
- 2 6
- 3 5
- 4 $m\angle U = 59; m\angle N = 59$
- 5 135°
- 6 $OC = 4; OD = 6$
- 7 $S(9, 2); H(5, -1)$

Friday

1a

	A	B	C	D
x	1	7	5	2
y	-3	-3	2	2

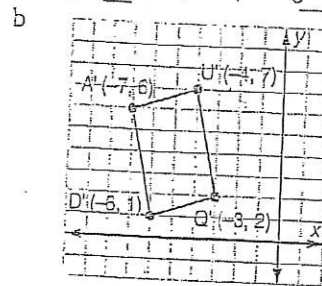


2

	A	B	C
x	4	2	-4
y	3	-6	-1

3a

	Q	U	A	D
x	2	7	6	1
y	3	4	7	6



4

$$\begin{bmatrix} 1 & 3 & 0 \\ -2 & 3 & 4 \end{bmatrix} + \begin{bmatrix} -1 & -1 & -1 \\ 0 & 0 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 2 & -1 \\ -2 & 3 & 4 \end{bmatrix}$$

5 70

6a x-coordinates are changed to their opposites;
y-coordinates remain the same

b

$$\begin{bmatrix} 2 & -3 & -2 \\ -4 & -5 & 2 \end{bmatrix}$$

Week Four

Question of the Week:

99 days!

Monday

- 1 75%
- 2 40%
- 3 70%
- 4 $83\frac{1}{3}\%$
- 5 60%
- 6 37.5%
- 7 20%
- 8 62.5%
- 9 65%
- 10 40%
- 11 7.5%
- 12 75%
- 13 $\frac{9}{10}$
- 14 $\frac{3}{50}$
- 15 $\frac{1}{500}$
- 16 $\frac{3}{10}$
- 17 $\frac{2}{25}$
- 18 $\frac{3}{5}$
- 19 a and c
- 20 a and d
- 21 66 $\frac{2}{3}\%$

Tuesday

- 1 a $-5x^2 - 2x$
b $3y^2 + 2xy + 10y$
c $6x + 8y$
d $3xy - 2y$
e $10y^2 + 8x$
- 2 a $-\frac{1}{2}$
b $-\frac{1}{2}x$
c $-\frac{5}{6}xy + \frac{1}{3}y^2$
d $4x + 5y$
e $4x^2 - 5y$
f $4x^2 - 5y + 3$
- 3 a True for $x = 0$ and $x = 1$; false for $x = 2$
b True for $x = 0$ and $x = -1$; false for $x = 2$
c True for $x = -1$; false for $x = 1$ and $x = 2$
- 4 a $10x + 2$
b $x^2 + 2x$
- 5 a $-\frac{1}{2}x$
b $\frac{7}{8}y$
c $2x - y$
- 6 a $5x + 2$
b $4y + 3$
c $x = 5; y = 6$
d $AB = 12; CD = 15$
- 7

x	-4	-2	0	2	4
$7x+2$	-26	-12	2	16	30
- 8 a v
b iv
c ii
d vi
e iii
f i
- 9 a 250
b 9.09
c 200

Wednesday

- 1 $\frac{13}{40}x^2 + \frac{6}{40}$
- 2 $\frac{5}{4}x$
- 3 $3x + 4$
- 4 $6.06x + 1.19$
- 5 $\frac{1}{3}x^2 + 3y$
- 6 $3.6y^2 + 2.7y$
- 7 $8.4xy + 8.62$
- 8 $\frac{1}{3}x^2 + \frac{5}{18}x$
- 9 $0.6x^2 + 0.25x$
- 10 $\frac{38}{35}x + \frac{23}{35}y$

Thursday

- 1 a $6x$
b $2 + 2x$
c $2 + (3 + x)$ or $\frac{2}{3+x}$
- 2 a The sum of 3 and a number is 5.
b A number divided by 15
c 2 less than the product of 3 and a number
- 3 a $2y(x + 3)$ or $2xy + 6y$
b $\frac{1}{2}xy$
- 4 a $70 + x$
b $70 + 2.5x$
c $70 + 4x$
- 5 $2x + 3x - 3 + 2x + 5 = 3x + 3 + x + 9 + 5$ or
 $7x + 2 = 4x + 17$
- 6 $3x + 7y = 2(3x + y)$
- 7 a $5(\$5.50) + 0.07(\$250)$
b $\$5.50x + 0.07y$
- 8 a $4x + 22 = 8x + 18$

Friday

1 a $y = 36$

b $y = 6$ or $y = -6$

c $y = 0$

d $y = 4$ or $y = -4$

2 a $w = 2$ or $w = -2$

b $w = -3$ or $w = 9$

c $w = 1$ or $w = -3$

d $w = -8$ or $w = 8$

3 a $m = 3$

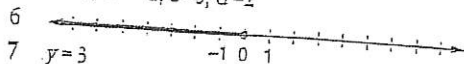
b $m = \frac{4}{3}$ or $m = -\frac{4}{3}$

c $m = 2$

4 a $x = 25$

b 25 ft by 77 ft

5 a $a = 5$; $b = -1$; $c = 0$; $d = 2$



7 $y = 3$

8 $x = 7$

9 a $x = 8.5$

b $\sqrt{a+4}$

c $c = 16$

d $3x^2 - 3$

Week Five

Question of the Week:

Grace was twenty-three, Helen was twenty-five, and Mary was twenty-two.

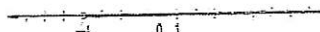
Monday

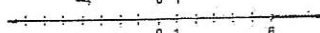
- 1 43.75%
- 2 36%
- 3 50%
- 4 30%
- 5 120%
- 6 2.5%
- 7 100%
- 8 a
- 9 a
- 10 b
- 11 Possible answers: 4 and 10, 40 and 100
- 12 Possible answers: 12 and 8, 18 and 12
- 13 250%
- 14 7%

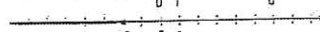
Tuesday

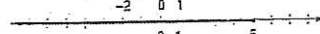
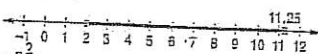
- 1 $1x$ or x $0.01x$
- 2 $10x$ $0.1x$
- 3 $25x$ $0.25x$
- 4 $100x$ $1x$ or x
- 5 $5(x-1)$ $0.05(x-1)$
- 6 $10(x+4)$ $0.1(x+4)$
- 7 $10x+25(x-1)$ $0.1x+0.25(x-1)$
- 8 $100x+5x$ $x+0.05x$
- 9 $25(x-2)+x$ $0.25(x-2)+0.01x$
- 10 $5x+x+3$ $0.05x+0.01(x+3)$
- 11 5 quarters, 4 nickels
- 12 15 quarters, 35 pennies, 24 dimes
- 13 11
- 14 16 nickels, 20 pennies, 14 dimes, 15 quarters

Wednesday

- 1 a $x > -4$ 

b $x \geq 6$ 

c $x \leq -2$ 

d $x \leq 5$ 
- 2a 4 b -10 c 2
- 3a $3x-1+x+1+2x+3+x-2 < 50$ or $7x+1 < 50$
- b $x < 7$
- 4 $x^2 \geq 81$; $x \geq 9$
- 5a $\frac{3+x+0+5}{4} < x-1$ b $x > 4$
- 6 $x > 5\frac{1}{3}$
- 7 $x \geq \$50$
- 8a $4(x-2)+3 < 40$
- 8b $x < 11.25$
- 8c 
- 9 $x = 3\frac{1}{2}$
- 10 $50^\circ \leq a \leq 60^\circ$
- 11 $x \geq 0$

Thursday

- 1 $y = -18$
- 2 a $x = -2$; $y = -4$
b $x = 1$; $y = -1$
c $x = 2$; $y = 12$
- 3 12 and 15
- 4 $30^\circ, 60^\circ, 90^\circ$
- 5 a $x = 5$
b $x = 1$
c $x = 0$
- 6 a, d, and e
- 7 60°
- 8 $MN = 45$
- 9 112.5°
- 10a $3x-2$
b $x = 2$
c $32r$
d $r \geq 2$

Friday

- 1 a -1
b 4
c 44
- 2 a -2
b -7
c 3a
- 3 $P = 3x + 2y + z$
- 4 $f(7) = 8$
- 5 \$350
- 6 $x = 2$ or $x = -2$
- 7 a $f(a) = 4a$
b $f(x) = 4x + 4$
- 1 Yes
- 2 Yes
- 3 No; any line $x > 0$
- 4 No
- 5 Yes
- 6 Yes
- 7 Yes
- 8 No; $x = 0$
- 9 No; $x = 2$
- 10 No; any line $-3 < x < 2$
- 11 Yes
- 12 Yes

Week Six

Question of the Week:

Answers on page 50

Monday

- 1 5
- 2 36
- 3 75
- 4 35
- 5 y
- 6 \$90
- 7 \$36
- 8 \$18
- 9 \$6250
- 10 600
- 11 \$54,000
- 12 \$65

Tuesday

- 1 a $x=2$
b $x=-13$
- 2 $x=1$
- 3 -5, -5; 35; 35, 21, 21; 56; 14
- 4 $x=31$
- 5 $x=2\frac{1}{4}$
- 6 ≈ 5.6
- 7 A: $17\frac{1}{2}$; B: 7.5
- 8 Only for jobs less than 3 hours; less than 3 hours
- 9 30 mph

Wednesday

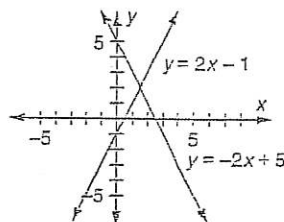
- 1 \$8.85
- 2 20,250 ounces, or $1265\frac{5}{8}$ pounds
- 3 $\approx 21\%$
- 4 a 5:12 PM
b 6960
- 5 252
- 6 ≈ 414 ft
- 7 \$5000 at 8% and \$4000 at 10%

Thursday

- 1 a 19
b 16
c 3
d -3
e -6
f 6
- 2 60 pounds
- 3 22 dimes
- 4 96
- 5 2 adult and 4 children's tickets
- 6 15 cm
- 7 a -6
b 4
c -11
d $5x-6$
- 8 \$6.03

Friday

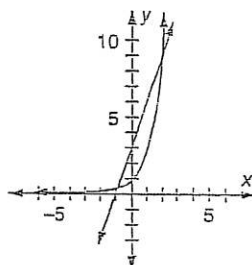
1



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

- 2 a $(-1, 7), (0, 4), (1, 3), (2, 4), (3, 7)$
b 1
- 3 a 64 feet
b 3.5 seconds

4

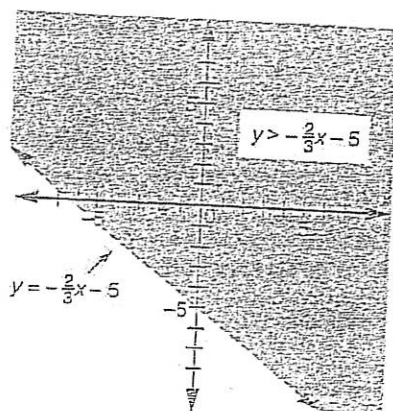


- a $x=2$
- b $3^2=9; 3(2)+3=6+3=9$
- 5 a 1981 and 1982, 1986 through 19
b 1986

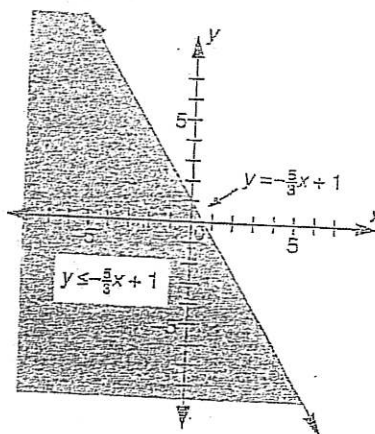
Problem of the Week

- 1 From the inequality, we want y values "greater than or equal to" the given expression in x . So we want y values at or above the boundary line.
- 2 From the inequality, we want y values "less than" the given expression in x . So we want y values below the boundary line.

3



4



5

