

Name Answer Key  
Block \_\_\_\_\_

Date \_\_\_\_\_  
Math 8

## NYS Test Review Packet

\* Test  
Wed 4/25  
Thurs 4/26  
Fri. 4/27 \*

### I. POLYNOMIALS:

What is a polynomial?

an expression with 1 or more terms

#### A. Add and Subtract Polynomials

1. Combine Like Terms  $3a^2b + 7a^2b = 10a^2b$

2.  $(3x^2y - 2xy + 4) - (4x^2y + 3xy - 3)$

$3x^2y - 2xy + 4 - 4x^2y - 3xy + 3 = -1x^2y - 5xy + 7$

3.  $(2b^2 + 3ab + 2a) + (3b^2 - 2ab - 6a)$

$2b^2 + 3ab + 2a + 3b^2 - 2ab - 6a = 5b^2 + 1ab - 4a$

#### B. Multiply and Divide Monomials

1.  $(3x^2z^2)(2xy^2z^3)$   $6x^3y^2z^5$

2.  $22a^3b^2 \div 2a^2$

$11ab^2$

#### C. Multiply polynomials

1.  $2x(3x^2 - 6xy)$  (distribute)

$2x(3x^2 - 6xy) = 6x^3 - 12x^2y$

2.  $(2x - 4)(3x + 3)$  (Double distribute, or "FOIL")

$6x^2 + 6x - 12x - 12$

#### D. Divide a polynomial by a monomial

1.  $(2x^4 - 4x^3y^2 + 4x^2) \div 2x^2$

$x^2 - 2xy^2 + 2$

$x^2 - 2xy^2 + 2$

#### E. Factor algebraic expressions using GCF or "unfoil"

1. Find the GCF and factor  $18n^2 + 12n - 6nm$

$3n + 2 - m$   
 $6n \overline{) 18n^2 + 12n - 6nm}$

2. Factor  $x^2 - 5x + 6$  (unfoil)

$6n(3n + 2 - m)$

$(x - 3)(x - 2)$

### Problem Set 1: Polynomials

Add or subtract the following polynomial expressions.

1.  $(6x + 14) - (9x + 5)$

$6x + 14 - 9x - 5$

$-3x + 9$

2.  $(6x + 19) + (14x + 5)$

$20x + 24$

3.  $(14x^2 + 13x + 12) - (7x^2 + 20x + 4)$

$14x^2 + 13x + 12 - 7x^2 - 20x - 4$

$7x^2 - 7x + 8$

4.  $(19x^2 + 9x + 16) - (5x^2 + 12x + 7)$

$14x^2 - 3x + 9$

5.  $15x^2 - 9x + 9 - (-16x^2 + 20x + 16)$

$15x^2 - 9x + 9 + 16x^2 - 20x - 16$

$31x^2 - 29x - 7$

6.  $(-9x^2 - 4x - 4) + (-9x^2 - 11x + 12)$

$-18x^2 - 15x + 8$

7. From  $19x^2 + 11x + 15$  subtract  $-5x^2 - 6x - 6$

$19x^2 + 11x + 15 + 5x^2 + 6x + 6$

$24x^2 + 17x + 21$

8.  $(-18x^2 + 7x - 14) - (-20x^2 + 17x - 12)$

$-18x^2 + 7x - 14 + 20x^2 - 17x + 12$

$2x^2 - 10x - 2$

9. Subtract  $-10x^2 + 16x - 15$  from  $-6x^2 + 19x + 19$

$-6x^2 + 19x + 19 + 10x^2 - 16x + 15$

$4x^2 + 3x + 34$

10.  $(17x^5 + 19x^2 + 15) + (9x^7 - 11x - 17)$

$9x^7 + 17x^5 + 19x^2 - 11x - 2$

11.  $(4x^2 + 15x - 18) - (9x^2 - 5x + 19)$

$4x^2 + 15x - 18 - 9x^2 + 5x - 19$

$5x^2 + 20x - 37$

12.  $(20x^6 - 13x^5) - (-7x^6 + 7x^5 - 20x^3 - 4x^2)$

$20x^6 - 13x^5 + 7$

(on next sheet)

13. How much greater is  $-12x^2 - 19x + 8$  than  $-15x^2 + 17x - 18$ ?

14. How much greater is  $-16x^2 - 7x - 5$  than  $18x^2 + 13x - 8$ ?

15. Subtract  $4x^4 - 14x^3 + 11$  from  $-14x^6 - 9x^5 - 12x^2$

16. From  $-16x^2 + 13x - 13$  subtract  $-19x^2 - 11x + 12$

17.  $(17x^2 + 7x - 14) + (-6x^2 - 5x - 18)$

18.  $(8x^3 - 8x - 4) - (-16x^6 + 9x^3 - 6x^2)$

19.  $(-18x^2 + 4x - 16) + (15x^2 + 4x - 13)$

$-3x^2 + 8x - 29$

20. How much greater is  $-19x^2 + 5x - 6$  than  $-5x^2 - 16x - 17$ ?

$$12) \quad 20x^6 - 13x^5 + 7x^6 - 7x^5 + 20x^3 + 4x^2$$

$$27x^6 - 20x^5 + 20x^3 + 4x^2$$

$$13) \quad (-12x^2 - 19x + 8) - (-15x^2 + 17x - 18)$$

$$\underline{-12x^2} - \underline{19x} + 8 + \underline{15x^2} - \underline{17x} + 18$$

$$3x^2 - 36x + 26$$

$$14) \quad (-16x^2 - 7x - 5) - (18x^2 + 13x - 8)$$

$$\underline{-16x^2} - \underline{7x} - \underline{5} - \underline{18x^2} - \underline{13x} + \underline{8}$$

$$-34x^2 - 20x + 3$$

$$15) \quad -14x^6 - 9x^5 - 12x^2 - (4x^4 - 14x^3 + 11)$$

$$-14x^6 - 9x^5 - 12x^2 - 4x^4 + 14x^3 - 11$$

$$-14x^6 - 9x^5 + 14x^3 - 12x^2 - 11$$

$$16) \quad -16x^2 + 13x - 13 + 19x^2 + 11x - 12$$

$$3x^2 + 24x - 25$$

$$17) \quad 11x^2 + 2x - 32$$

$$18) \quad 8x^3 - 8x - 4 + 16x^6 - 9x^3 + 6x^2$$

$$16x^6 - x^3 + 6x^2 - 8x - 4$$

$$19) \quad -3x^2 + 8x - 29$$

$$20) \quad -19x^2 + 5x - 6 + 5x^2 + 16x + 17$$

$$-14x^2 + 21x + 11$$

Problem Set 2: Polynomials

Multiply or divide the following polynomial expressions.

1. $2x(3x + 11)$ $6x^2 + 22x$	2. $x(4x + 2)$
3. $3x(9x^2 + 4x + 3)$ $27x^3 + 12x^2 + 9x$	4. $(2x + 7)(8x)$
5. $x^2(-2x - 9)$ $-2x^3 - 9x^2$	6. $5x(-6x - 3)$
7. $(x + 1)(x + 6)$ $x^2 + 7x + 6$	8. $(x + 9)(3x + 3)$
9. $(2x + 1)(5x + 2)$ FOIL $10x^2 + 4x + 5x + 2$ $10x^2 + 9x + 2$	10. $(x + 7)(x - 3)$
11. $(x - 3)(-x + 2)$ FOIL $-x^2 + 2x + 3x - 6$ $-x^2 + 5x - 6$	12. $(x + 6)(-3x + 2)$
13. $(x - 3)(x - 6)$ $x^2 - 9x + 18$	14. $(2x + 7)(3x - 4)$
15. $\frac{28x^2}{7x^2}$ $4$	16. $\frac{42x^2}{48x^4}$
17. $\frac{24x^4}{32x^4}$ $\frac{3}{4}$	18. $\frac{35x}{45x}$
19. $\frac{9x}{9x^8}$ $\frac{3}{2x^7}$	20. $\frac{12x^3}{108x^3}$
21. $\frac{6x^3 + 30x^2 + 24x}{6x}$ $x^2 + 5x + 4$	22. $\frac{15x^3 + 20x^2 + 5x}{5x}$
23. $(14x^4 + 10x^2 + 6x) \div 6x$ $\frac{7x^3}{3} + \frac{5x}{3} + 1$	24. $(72x^4 + 81x^2 + 9x) \div 9x$
25. $(60x^{12} + 60x^{11} + 30x^8) \div 30x$ $2x^{11} + 2x^{10} + x^7$	26. $(60x^{12} + 24x^{10} + 24x^3) \div 12x^2$

### Problem Set 3: Polynomials

Factor the following polynomial expressions.

1. $-336x^3 + 288x$	2. $3x^2 - 3x$ $3x(x-1)$
3. $-3x^3 - 33x$	4. $-15x^2 + 18x$ $3x(-5x+6)$
5. $4x^3 - 28x$	6. $16x^3 + 10x^2 - 18x$ $2x(8x^2 + 5x - 9)$
7. $19x^3 - 19x$	8. $-6x^3 + 8x$ $2x(-3x^2 + 4)$
9. $36x^3 - 24x^2 + 8x$	10. $-14x^2 + 16x$ $2x(-7x+8)$
11. $-16x^4 - 32x^3 - 80x^2$	12. $14x^5 - 24x^4$ $2x^4(7x-12)$

1. $x^2 + 10x + 25$	2. $x^2 + 3x + 2$ $(x+2)(x+1)$
3. $x^2 + 7x + 12$	4. $x^2 + 10x + 16$ $(x+2)(x+8)$
5. $x^2 + 6x + 9$	6. $x^2 + 7x + 6$ $(x+6)(x+1)$
7. $x^2 + 11x + 30$	8. $x^2 + 9x + 20$ $(x+4)(x+5)$
9. $x^2 + 15x + 14$	10. $x^2 + 6x + 8$ $(x+2)(x+4)$

II. PERCENTS:

A. Calculate sales tax

Find how much you would pay for jeans marked \$24.59 with a sales tax of 8.25%.

$$\frac{x}{24.59} = \frac{8.25}{100}$$

$$x = \$2.03 \text{ tax}$$

$$\begin{array}{r} 24.59 \\ + 2.03 \\ \hline 28.62 \end{array}$$

\$28.62  
total

B. Calculate percent increase or decrease

If you bought a car for \$15,000 and now it is worth \$12,000, what is the percent of decrease in the value of the car?

$$\frac{3000}{15000} = \frac{x}{100}$$

x = 20%

C. Calculate interest.

How much interest would you pay if you borrowed \$6,000 for 3 years at a rate of 3.5% per year? (I = prt)

$$I = p \cdot r \cdot t \\ = 6000 (.035) 3$$

I = \$630

D. Calculate sale price.

If a jacket is originally \$98.50 and is on sale, 30% off, find the amount that you would pay for the jacket.

$$\frac{x}{98.50} = \frac{30}{100}$$

$$x = \$29.55 \text{ off}$$

$$\begin{array}{r} 98.50 \\ - 29.55 \\ \hline 68.95 \end{array}$$

\$68.95

E. Calculate commission

A car salesman earns 2% of all sales. How much will a person earn if he sells a car for \$17,500?

$$\frac{x}{17500} = \frac{2}{100}$$

x = \$350

F. Calculate gratuity

How much should a family leave for a gratuity if their meal was \$48.64 and they want to leave 20% gratuity?

\* estimate →

$$\frac{x}{50} = \frac{20}{100}$$

x = \$10 tip

G. Estimate the percent.

If 94 out of 511 students walk to school each day, estimate the percent of students that walk to school.

$$\frac{100}{500}$$

$$\frac{1}{5} = \frac{x}{100}$$

$$\frac{5x}{5} = \frac{100}{5}$$

x = 20%

H. Calculate percents less than one and greater than 100.

If 0.5% of people who take a medication experience side effects, and 8,220 people are taking the medication, how many will experience side effects?

$$\frac{x}{8220} = \frac{0.5}{100}$$

x = 41 people

**Problem Set 4: Percents**

Answer the following percent problems.

1. If you purchase an iPod that costs \$301.49, about how much sales tax will you pay if the rate is 9.6%? NO CALCULATOR

$$\frac{x}{300} = \frac{10}{100}$$

$$x = \$30 \text{ tax}$$

2. A shirt that regularly sells for \$38.50 is on sale for 25% off. Estimate the sale price of the shirt? NO CALCULATOR

$$\frac{x}{40} = \frac{25}{100}$$

$$x = \$10 \text{ off}$$

Sale price  $40 - 10 = \$30$

3. If 13 out of 27 students in a computer class are seniors, then what percent of the class is composed of seniors?

$$\frac{13}{27} = \frac{x}{100}$$

$$\frac{27x}{27} = \frac{1300}{27}$$

$$x = 48\%$$

4. A meteorologist was accurate 90% of the time, reporting accurately on 45 days. How many days of weather did he report?

$$\frac{45}{x} = \frac{90}{100}$$

$$\frac{90x}{90} = \frac{4500}{90}$$

$$x = 50 \text{ days}$$

5. Jimmy owes \$29,500 for a car loan to be repaid in 36 months. If the interest rate is 7.5%, then how much interest will he pay?

$$I = p \cdot r \cdot t$$

$$I = 29500 \cdot .075 \cdot 3$$

$$I = \$6,637.50$$

6. At Kennedy High School, 119 students walk to school. If this number is 35% of school enrollment, then how many students are enrolled at the school?

$$\frac{119}{x} = \frac{35}{100}$$

$$\frac{85x}{85} = \frac{11900}{35}$$

$$x = 340 \text{ students}$$

7. Jerry deposited \$550.00 into a saving account at his bank. If the interest rate is 2.5%, then how much will he have after 24 months?

$$I = p \cdot r \cdot t$$

$$I = 550 (.025)(2)$$

$$550 + \frac{27.50}{577.50} = \$577.50$$

amount of decrease

8. Last year a school had 249 honor students as compared with only 243 this year. Estimate the percent decrease in honor students? NO CALCULATOR

$$\frac{5}{250} = \frac{x}{100}$$

$$\frac{500}{250} = \frac{250x}{250}$$

$$x = 2\% \text{ decrease}$$

original

9. At the Hip-Hop Shop each salesperson receives an 8.5% commission on sales. Estimate the amount a salesperson earn if she sold \$250 in goods? NO CALCULATOR

$$10\% \text{ of } 250 \text{ is}$$

$$\$25 \text{ commission}$$

estimate (a little less than \$25)

10. At a supermarket the hourly pay increased from \$14.00 to \$15.50. What is the percent increase in pay?

amt. increase

$$\frac{1.50}{14} = \frac{x}{100}$$

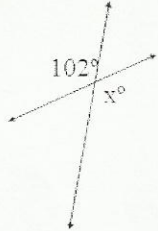
$$\frac{150}{14} = \frac{14x}{14}$$

$$x = 11\% \text{ increase}$$

III. GEOMETRY: Angles  
CONGRUENT:

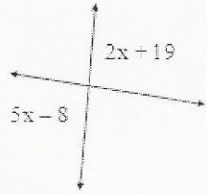
A. Vertical angles:

1. Find the missing angle.



$$x = 102^\circ$$

2. Use an equation to find the missing angle.



$$\begin{array}{r|l} 5x - 8 & 2x + 19 \\ -2x & -2x \\ \hline 3x - 8 & 19 \\ +8 & +8 \\ \hline 3x & = \frac{27}{3} \end{array}$$

The angles are equal.  
Solve for x.

$$\begin{array}{l} 2x + 19 \\ 2(9) + 19 \\ 18 + 19 \\ \boxed{37^\circ} \end{array}$$

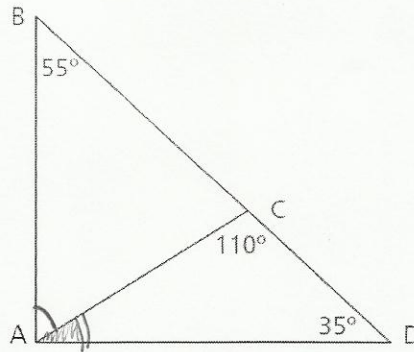
$$\boxed{x = 9}$$

B. Complementary:

2 angles that add up to  $90^\circ$

The missing angle is  $37^\circ$

Which two angles in the triangles below are complementary?

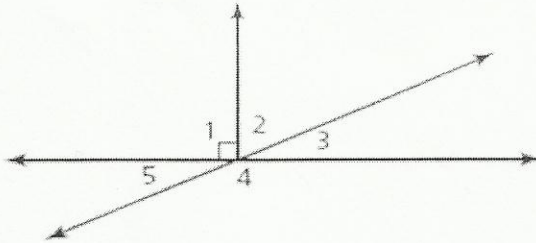


[not drawn to scale]

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

C. Supplementary: 2 angles that add up to  $180^\circ$  (make a straight line)

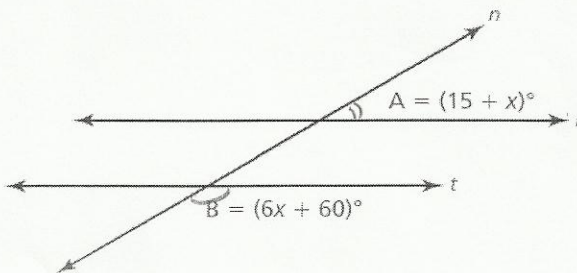
1. Which angles are supplementary in the diagram below?



Angles 3+4  
or  
angles 4+5  
or  
angles 5+1+2,  
etc.

2. Use an equation to find the missing angle.

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



[not drawn to scale]

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

Show your work.

The angles add up to 180.

$$15 + x + 6x + 60 = 180$$

$$7x + 75 = 180$$

$$\underline{-75 \quad -75}$$

Answer 30 degrees

$$\frac{7x}{7} = \frac{105}{7}$$

$$x = 15^\circ$$

angle A  
 $x + 15$   
 $15 + 15$   
 $30^\circ$

D. Find missing angles when you have parallel lines with a transversal

Alternate Interior Angles



Angles that alternate on the inside of 11 lines.

Alternate Exterior Angles



Angles that alternate on the outside of 11 lines

Corresponding Angles

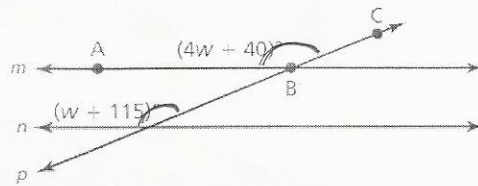


Angles that "match up".

They are in the same position on 11 lines.

all of these are congruent! (equal to each other)

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



[not drawn to scale]

What is the measure of  $\angle ABC$ ?

Show your work.

These angles are equal.

$$\begin{array}{r} w + 115 \\ - w \\ \hline 115 \\ - 40 \\ \hline 75 = \frac{3w}{3} \end{array} \quad \begin{array}{r} 4w + 40 \\ - w \\ \hline 3w + 40 \\ - 40 \\ \hline 3w \\ - 40 \\ \hline w = 25 \end{array}$$

Answer 140° degrees

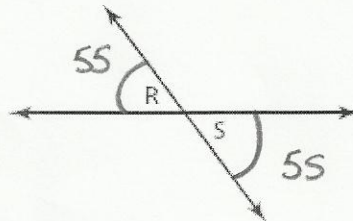
$\angle ABC$

$$\begin{array}{r} 4w + 40 \\ 4(25) + 40 \\ 100 + 40 \\ \hline 140^\circ \end{array}$$

### Problem Set 5: Angles

1.

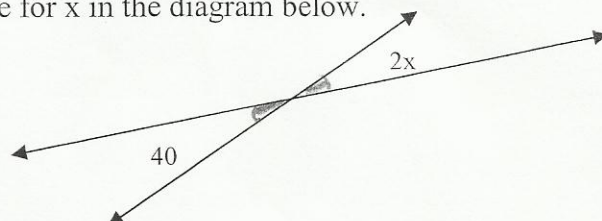
In the figure below,  $\angle R$  and  $\angle S$  are formed by two intersecting lines.



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

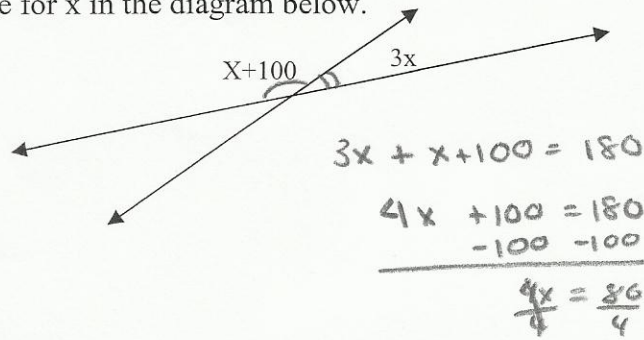
- A  $35^\circ$
- B  $55^\circ$
- C  $110^\circ$
- D  $125^\circ$

2. Solve for  $x$  in the diagram below.



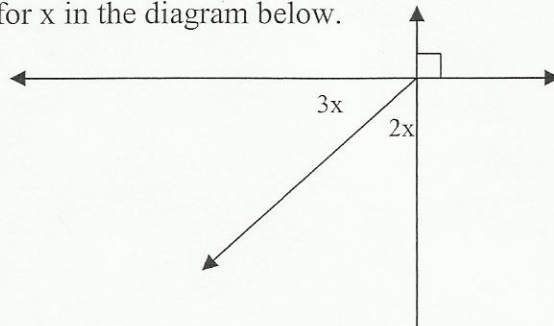
$$\begin{array}{r} 2x = 40 \\ \frac{2x}{2} = \frac{40}{2} \\ \hline x = 20 \end{array}$$

3. Solve for  $x$  in the diagram below.



$$x = 20$$

4. Solve for  $x$  in the diagram below.

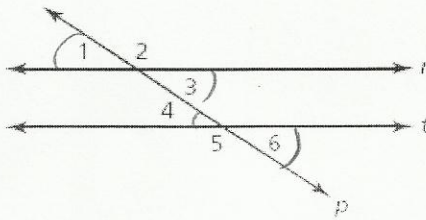


$$3x + 2x = 90$$

$$\frac{5x}{5} = \frac{90}{5}$$

$$x = 18$$

5. In the diagram below, line  $r$  and line  $t$  are parallel, and line  $p$  is a transversal.

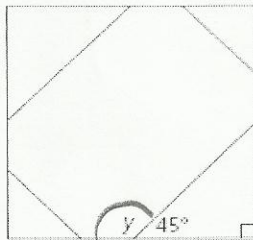


Which angles are supplementary?

*→ make a straight line*

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

6. Luther makes a table in his shop class. A diagram of the top of the table is shown below.



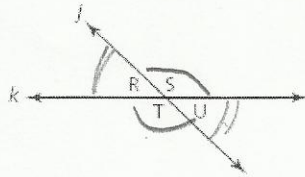
What is the measure of  $\angle y$ ?

- A  $45^\circ$
- B  $55^\circ$
- C  $135^\circ$
- D  $145^\circ$

$$\begin{array}{r} 7, \\ 180 \\ -45 \\ \hline 135 \end{array}$$

7.

Line  $j$  and line  $k$  intersect, as shown below.

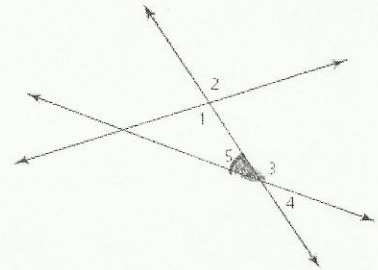


Which pairs of angles are congruent?

- A  $\angle S$  and  $\angle R$ ;  $\angle T$  and  $\angle U$
- B  $\angle R$  and  $\angle T$ ;  $\angle U$  and  $\angle S$
- C  $\angle T$  and  $\angle S$ ;  $\angle U$  and  $\angle R$
- D  $\angle U$  and  $\angle T$ ;  $\angle T$  and  $\angle S$

8.

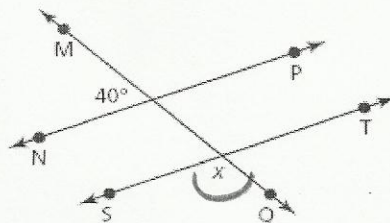
In the diagram below, which angle is congruent to  $\angle 5$ ?



- F  $\angle 1$
- G  $\angle 2$
- H  $\angle 3$
- J  $\angle 4$

9.

In the diagram below,  $\overline{NP}$  and  $\overline{ST}$  are parallel, and  $\overline{MQ}$  intersects both lines.



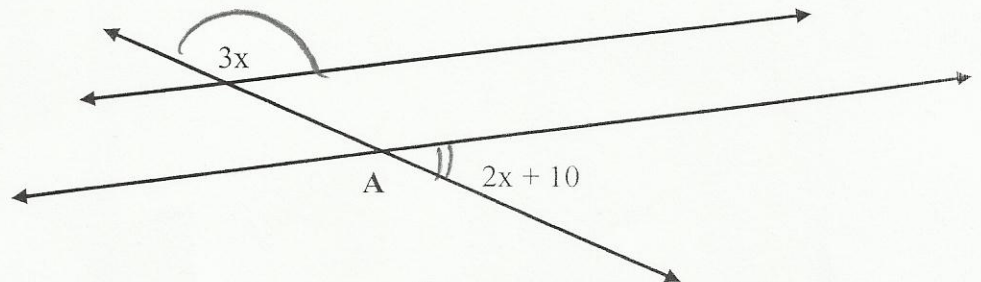
[not drawn to scale]

What is the measure of  $\angle x$ ?

- F  $40^\circ$
- G  $90^\circ$
- H  $140^\circ$
- J  $180^\circ$

$$\frac{180}{-40} \\ \hline 140$$

10.



**Part A**

Find the value of  $x$ .

**Part B**

What is the measure of angle A? Show all work!

$$3x + 2x + 10 = 180 \\ 5x + 10 = 180 \\ -10 \quad -10$$

$$\frac{5x}{5} = \frac{170}{5} \\ x = 34^{10}$$

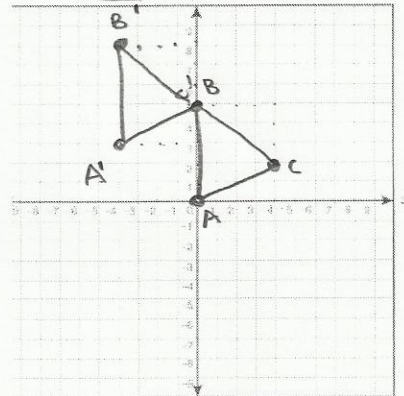
$$3(34) \\ \boxed{102^\circ}$$

IV. GEOMETRY: Transformations

CONGRUENT: *the same, (equal measures)*

A. Translation

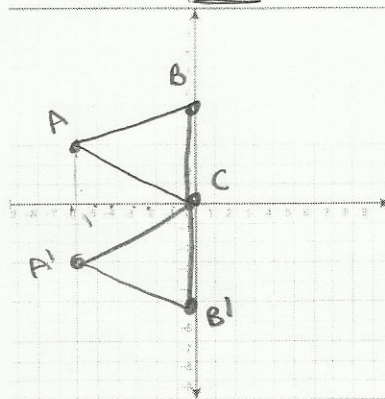
Draw polygon ABC, A (0, 0), B(0, 5), C(4,2). Then translate the polygon 3 units up and 4 units to the left.



*Shapes are congruent.  
move each point  
separately*

B. Reflection

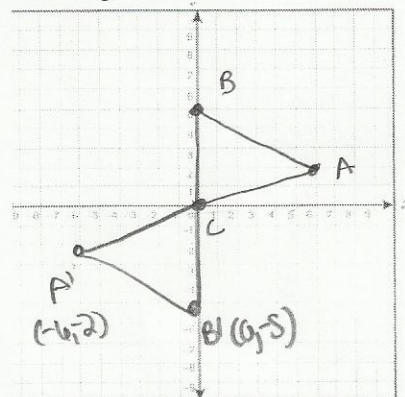
Draw polygon ABC, A (-6, 3), B(0, 5), C(0, 0). Reflect the triangle in the x axis. Label the new triangle A'B'C'.



*← flip each point over the x.*

C. Rotation

Draw polygon ABC, A (6, 2), B(0, 5), C(0, 0). Rotate the triangle 180 degrees. Label the new triangle A'B'C'.



To rotate 90 degrees:

*Switch the x and y.*

*Clockwise: make the second coordinate neg. (A → (2, -6))*

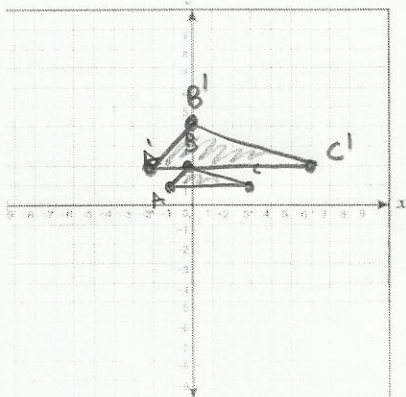
*Counter Clockwise: make the first coord. neg. (A' → (-2, 6))*

To rotate 180 degrees:

*Make the x and y coordinates Both negative.*

**D. Dilation**

Draw polygon ABC, A(-1, 1), B(0, 2), C(3, 1). Dilate the figure by a scale factor of 2. Label the new triangle A'B'C'.



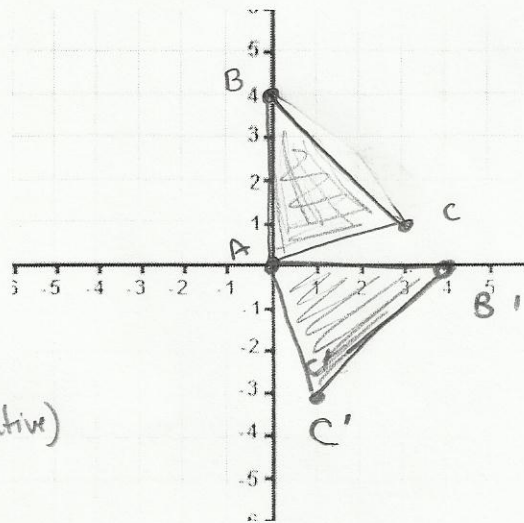
multiply each # by 2.  
 $A'(-2, 2)$ ,  $B'(0, 4)$ ,  $C'(6, 2)$

E. Which transformations result in congruent figures? *Translate, Rotate, Reflect.*

**Problem Set 6: Transformations**

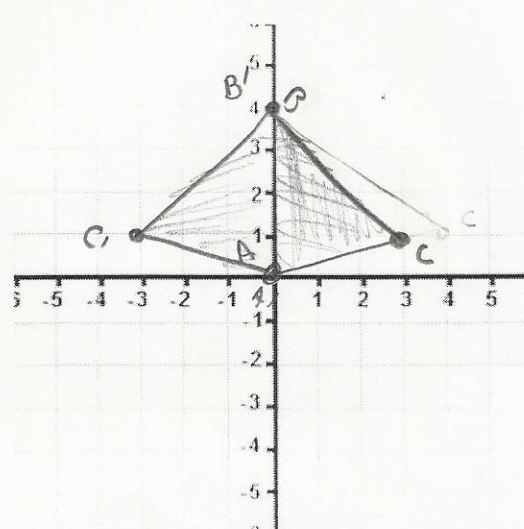
1. Draw the triangle A(0, 0) B(0, 4) C(3, 1). Rotate the triangle 90 degrees clockwise. What are the coordinates of the image A'B'C'?

90° Clockwise  
 $A(0, 0) \rightarrow A'(0, 0)$   
 $B(0, 4) \rightarrow B'(4, 0)$   
 $C(3, 1) \rightarrow C'(1, 3)$   
 (Switch x & y. make new y negative)



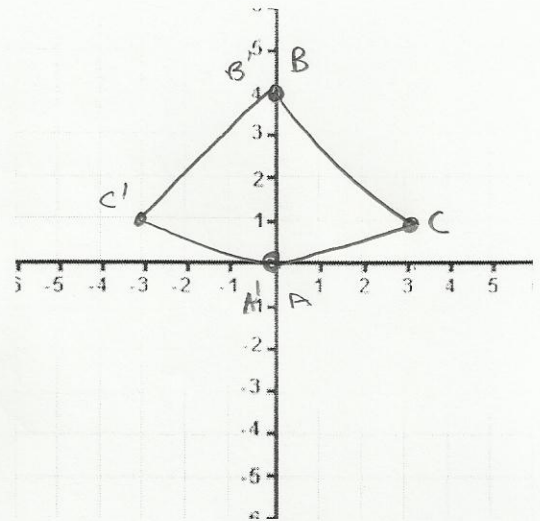
2. Draw the triangle A(0, 0) B(0, 4) C(3, 1). Reflect the triangle over the y axis. What are the coordinates of the image A'B'C'?

$A'(0, 0)$   
 $B'(0, 4)$   
 $C'(-3, 1)$



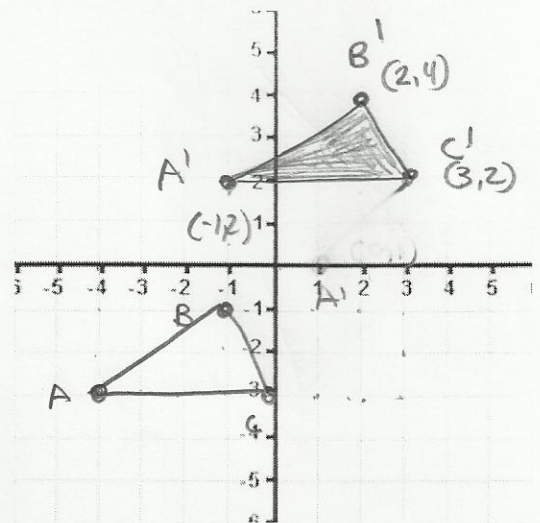
(Y)

3. Draw the triangle  $A(0, 0)$   $B(0, 4)$   $C(3, 1)$ . Reflect the triangle over the y-axis. What are the coordinates of the image  $A'B'C'$ ?



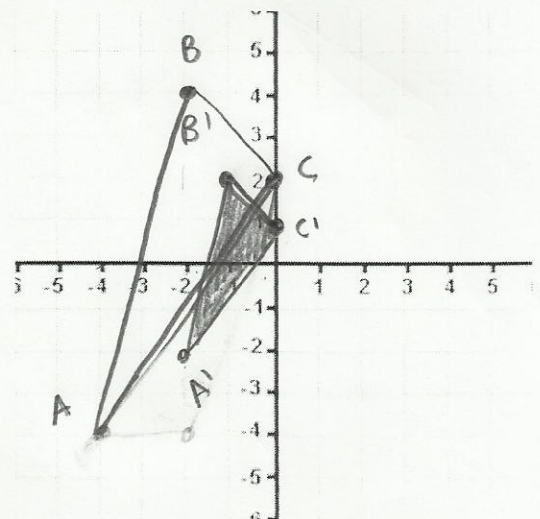
4. Draw the triangle  $A(-4, -3)$   $B(-1, -1)$   $C(0, -3)$ . Translate the triangle 3 units to the right and 5 units up. What are the coordinates of the image  $A'B'C'$ ?

$$\begin{aligned} A' &(-1, 2) \\ B' &(2, 4) \\ C' &(3, 2) \end{aligned}$$



5. Draw the triangle  $A(-4, -4)$   $B(-2, 4)$   $C(0, 2)$ . Dilate the figure by a scale factor of 5. What are the coordinates of the image  $A'B'C'$ ?

$$\begin{aligned} A' &(-2, -2) \\ B' &(-1, 2) \\ C' &(1, 1) \end{aligned}$$



V. **Miscellaneous**

A. Use laws for exponents (multiplying and dividing)

1.  $4^3 \cdot 4^5 = ?$   $4^3 \cdot 4^5 = 4^8$

2.  $2 + 2^3 - (2 - 5)$

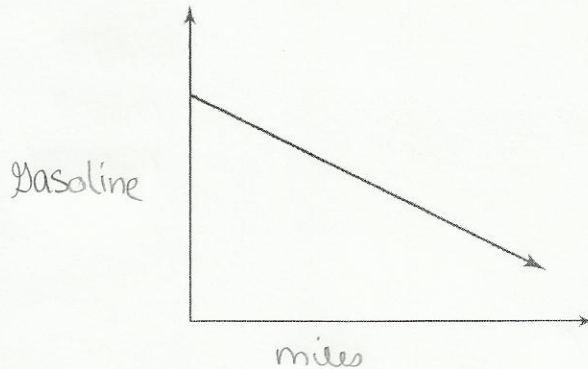
$2 + 8 - (-3)$   
 $2 + 8 + 3 = 13$

B. Write out inequalities with math symbols when you're given a sentence.

Rachelle sells knit scarves at a craft show. She sells each scarf for \$10. The fee for having a table at the craft show is \$50. Write in inequality to use to determine how many scarves,  $s$ , Rachelle has to sell to earn a profit of at least \$100.

$10s - 50 \geq 100$

C. Describe a situation that matches the graph below.



Gasoline left in a car after a certain # of miles drive.

D. Convert equivalent measurements.

1. Convert 27 degrees Celsius to degrees Fahrenheit. (NO CALC)

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

$F = \frac{5}{9} C + 32$   
 $= \frac{5}{9}(27) + 32$   
 $= 15 + 32$   
 $= 47^\circ$

2. How many feet are in 8 miles? (1 mile = 5,280 feet)

miles  
feet

$\frac{1}{5280} = \frac{8}{X}$

$\begin{array}{r} 3 \overline{) 5280} \\ \underline{15} \phantom{00} \\ 15 \phantom{00} \\ \underline{15} \phantom{00} \\ 0 \phantom{00} \\ \underline{0} \phantom{00} \\ 0 \phantom{00} \end{array}$   
 $42240$

$42,240 \text{ ft}$

VI. STUFF FROM 7<sup>TH</sup> GRADE

- A. Solve multi-step equations.  
 $10(6-x) + x - 1 = 2x + 26$

1) distribute

$$60 - 10x + x - 1 = 2x + 26$$

$$\begin{array}{r} 59 - 9x = 2x + 26 \\ + 9x \quad + 9x \\ \hline \end{array}$$

$$\begin{array}{r} 59 = 11x + 26 \\ - 26 \quad - 26 \\ \hline \end{array}$$

$$33 = 11x$$

$$x = 3$$

Check

$$10(6-3) + 3 - 1 = 2(3) + 26$$

$$10(3) + 3 - 1 = 6 + 26$$

$$30 + 3 - 1 = 32$$

$$32 = 32$$

- B. Find interior angles of a polygon  
 What is the sum of the angles in a hexagon?

$$(n-2) \cdot 180$$

$$(6-2) \cdot 180$$

$$\frac{180}{4}$$

$$720$$

$$720^\circ$$

- C. Write a function from a table

x	y
1	1
2	3
3	5
4	7
6	11
10	22

pattern  
 y values at zero  
 $y = 2x + -1$

Find the missing value

Write a function rule to find any value of y if you are given x.

$$y = 2x + 1$$

- D. Calculate Unit Price using a proportion  
 If shampoo is 3.99 for 16 ounces, or 5.50 for 24 ounces, which is a better deal and why?

$$\frac{3.99}{16} = \frac{x}{1}$$

$$\$0.37/oz$$

$$\frac{5.50}{24} = \frac{x}{1}$$

$$\$0.23/oz$$

- E. Calculate distance on a map using a scale  
 F. Convert money between different currencies.

\* Better deal!

## Problem Set 7

1.

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

New Tunes	New Music
\$5.00 sign-up fee	\$9.00 sign-up fee
\$0.75 per song	\$0.50 per song

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

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

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

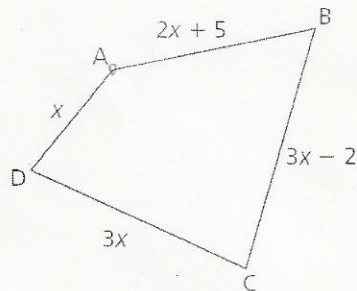
Show your work.

$$\begin{array}{r}
 0.75s + 5 = 0.50s + 9 \\
 -0.50s \quad -0.50s \\
 \hline
 0.25s + 5 = 4 \\
 -5 \quad -5 \\
 \hline
 0.25s = -1 \\
 \frac{0.25s}{0.25} = \frac{-1}{0.25} \\
 s = -4
 \end{array}$$

$s = 16$

Answer 16 songs

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



[not drawn to scale]

Find the length of side  $\overline{BC}$ .

Show your work.

$$\begin{array}{r}
 2x + 5 + 3x - 2 + 3x + x = 84 \\
 9x + 3 = 84 \\
 -3 \quad -3 \\
 \hline
 9x = 81 \\
 \frac{9x}{9} = \frac{81}{9} \quad \boxed{x = 9}
 \end{array}$$

Answer 9 inches

3. Solve the equation below for  $p$ .

$$3(p + 6) = 5p + 4$$

Show your work.

$$\begin{array}{r} 3p + 18 = 5p + 4 \\ -3p \quad -3p \\ \hline 18 = 2p + 4 \\ -4 \quad -4 \\ \hline 14 = 2p \\ \frac{14}{2} = \frac{2p}{2} \quad \boxed{p=7} \end{array}$$

Answer  $p = \underline{\quad 7 \quad}$

Check your answer.

$$\begin{array}{l} 3(p+6) = 5p+4 \\ 3(7+6) = 5(7)+4 \\ 3(13) = 35+4 \\ 39 = 39 \end{array}$$

Show your work.

- 4.

Rashid wrote the sentence below.

$48 \geq 4 + x \cdot 11$   
 Forty-eight is greater than or equal to four plus the product of a certain number,  $x$ , and eleven.

Write Rashid's sentence as an algebraic inequality.

Answer  $\underline{48 \geq 4 + 11x}$

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

Time in Minutes (m)	Gallons of Water (g)
0	100
1	120
2	140
3	160
4	180

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

No arrows if it is a line segment!

Gallons of water (g)

