Summer Assignment Coversheet

Key

Course	Math 8 and Advanced Math 8
Teacher(s)	Cheryl Catts, Loretta Hayward, Monica Kelly, and Karisa Wescott
Due Date	– Optional
Grade Category/Weight for Q1	Not applicable
Common Core and/or NJ Core Curriculum Content Standards covered	7.RP - Analyze proportional relationships and use them to solve real-world and mathematical problems. 7.NS - Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. 7.EE - Use properties of operations to generate equivalent expressions. Solve real-life and mathematical problems using numerical and algebraic expressions and equations. 7.SP - Use random sampling to draw inferences about a population. Draw informal comparative inferences about two populations. Investigate chance processes and develop, use, and evaluate probability models. 7.GB - Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
Description of Assignment	This packet is a series of pre-algebraic problems covering skills taught in 7th grade.
Purpose of Assignment	This packet is meant to prepare students for the course and give them practice on skills needed to be successful in 8th grade Math.
Specific Expectations	Students are expected to attempt every problem without the use of a calculator unless otherwise stated.
Where to Locate Assignment	School District Website
Teacher Contact Information	Cheryl Catts – cattsch@clearviewregional.edu Loretta Hayward – haywardlo@clearviewregional.edu
Helpful Resource(s)	www.coolmath.com www.funbrain.com www.aplusmath.com www.mathmaster.org
Dept. Coordinator Signature	

Math 8/Advanced Math 8 Review Packet

Reminder: Math 8 are to complete 1 – 6 in each section and Advanced Math 8 are to complete 1 – 10 in each section.

Order of Operations

(P)	**Parenthesis**
E^x	***Exponents***
M/D	**Multiply or Divide** *from left to right in the problem
A/S	**Add or Subtract** *from left to right

1. $6 + 4 - 2 \cdot 3$

$6 + 4 - 6$

$10 - 6 = \boxed{4}$

2. $15 \div 5 \cdot 2 - 1$

$3 \cdot 2 - 1$

$6 - 1 = \boxed{5}$

3. $9 - 4 + 7 \cdot 3$

$9 - 4 + 21$

$5 + 21 = \boxed{26}$

4. $13 + (6 - 4) \cdot 7$

$13 + 2 \cdot 7$

$13 + 14 = \boxed{27}$

5. $5 + 9 \cdot 3^2 - 4$

$5 + 9 \cdot 9 - 4$

$5 + 81 - 4$

$86 - 4 = \boxed{82}$

6. $(2 + 3)^2 - 3(4)$

$5^2 - 3(4)$

$25 - 3(4)$

$25 - 12 = \boxed{13}$

7. $\dfrac{3[10-(27\div 3)]}{4-7}$

$\dfrac{3[10-9]}{4-7} = \dfrac{3(1)}{4-7} =$

$\dfrac{3}{-3} = \boxed{-1}$

8. $35 - 3(5 + 1) \cdot 2 - 1$

$35 - 3(6) \cdot 2 - 1$

$35 - 18 \cdot 2 - 1$

$35 - 36 - 1$

$-1 - 1 = \boxed{-2}$

9. $5(14 - 39 \div 3) + 4 \cdot \frac{1}{4}$

$5(14 - 13) + 4 \cdot \frac{1}{4}$

$5(1) + 4 \cdot \frac{1}{4}$

$5 + 4 \cdot \frac{1}{4}$

$5 + 1 = \boxed{6}$

10. $[6(7 - 4)^2] \div 3$

$[6(3)^2] \div 3$

$[6(9)] \div 3$

$54 \div 3 = \boxed{18}$

Operations with Integers

Integer Rules	
Adding Same Signs Add and Keep the Sign 13 + 35 = 48 -5 + -23 = -28	**Subtract** Copy, Change, Opposite Then add -65 - 24 = -65 + -24 = -79
Adding Different Signs Subtract and Take Sign of Number with Larger Abs. Value -13 + 35 = 22	**Multiply & Divide** Same Signs Positive Answer Different Signs Negative Answer

1. $9 + -4 = \boxed{5}$

2. $7 + -10 = \boxed{-3}$

3. $\frac{-10}{2} = \boxed{-5}$

4. $-3(-5) = \boxed{15}$

5. $-5 + -7 = \boxed{-12}$

6. $5 + (+2) = \boxed{7}$

7. $-26 + -10 = \boxed{-36}$

8. $\frac{-39}{-13} = \boxed{3}$

9. $7(-11) = \boxed{-77}$

10. $-2 + (+5) = \boxed{3}$

Fractions

Convert each fraction to a decimal using long division.

How to use long division

$$\frac{368}{16}$$

$$\begin{array}{r} 23 \\ 16\overline{)368} \\ -32\downarrow \\ 48 \\ -48 \\ 0 \end{array}$$

1. $\frac{3}{8}$

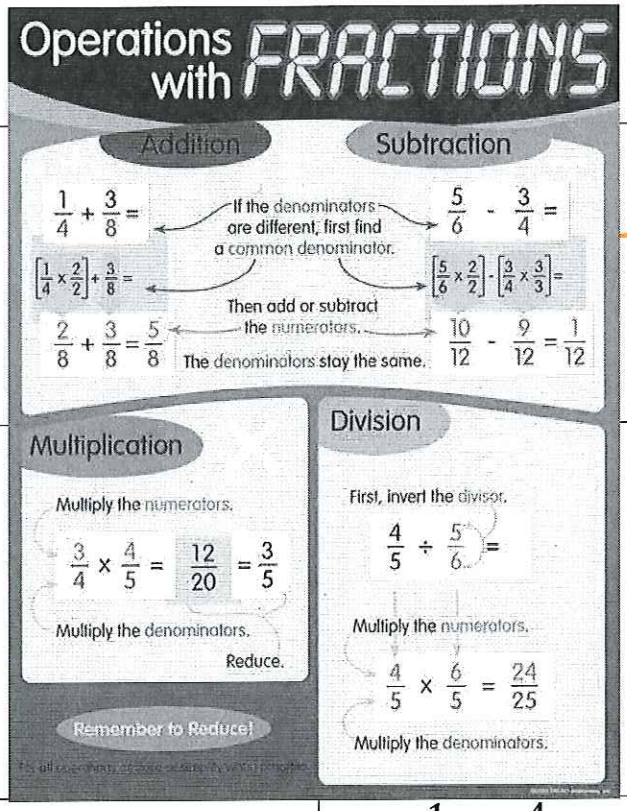
$$\begin{array}{r} 0.375 \\ 8\overline{)3.000} \\ -24 \\ 60 \\ -56 \\ 40 \\ -40 \\ 0 \end{array}$$

$\boxed{0.375}$

2. $\frac{13}{40}$

$$\begin{array}{r} 0.325 \\ 40\overline{)13.000} \\ -120 \\ 100 \\ 80 \\ 200 \\ 200 \\ 0 \end{array}$$

$= \boxed{0.325}$



3. $\frac{2}{5} + \frac{4}{15}$

$\frac{2}{5}\left(\frac{3}{3}\right) = \frac{6}{15}$

$\frac{6}{15} + \frac{4}{15} = \frac{10}{15} = \boxed{\frac{2}{3}}$

4. $\frac{1}{3} - \frac{3}{8}$

$\frac{1}{3}\left(\frac{8}{8}\right) - \frac{3}{8}\left(\frac{3}{3}\right)$

$\frac{8}{24} - \frac{9}{24} = \boxed{\frac{-1}{24}}$

5. $\frac{-3}{2} \bullet \frac{4}{5}$

$\frac{-12}{10} = \boxed{\frac{-6}{5}}$

6. $\frac{6}{11} \div \frac{3}{22}$

$\frac{\cancel{6}^{2}}{\cancel{11}_{1}} \cdot \frac{\cancel{22}^{2}}{\cancel{3}_{1}}$

$= \frac{4}{1} = \boxed{4}$

7. $2\frac{3}{7} + \frac{7}{21}$

$\frac{17}{7} + \frac{7}{21} = \frac{17}{7} \cdot \left(\frac{3}{3}\right) = \frac{51}{21} + \frac{7}{21}$

$= \boxed{\frac{58}{21} \text{ or } 2\frac{16}{21}}$

8. $8\frac{1}{2} - 1\frac{4}{5}$

$\frac{17}{2} - \frac{9}{5} = \frac{17}{2}\left(\frac{5}{5}\right) - \frac{9}{5}\left(\frac{2}{2}\right)$

$= \frac{85}{10} - \frac{18}{10} = \boxed{\frac{67}{10} \text{ or } 6\frac{7}{10}}$

9. $3\frac{1}{2} \bullet 6\frac{2}{3}$

$\frac{7}{2} \cdot \frac{20}{3} = \frac{140}{6} = \boxed{\frac{70}{3} \text{ or } 23\frac{1}{3}}$

10. $4\frac{1}{4} \div \frac{5}{8}$

$\frac{17}{4} \cdot \frac{8}{5} = \boxed{\frac{34}{5} \text{ or } 6\frac{4}{5}}$

Evaluating Expressions

Evaluate each expression below given that: $x = 3$, $y = 2$ *and* $z = \frac{1}{2}$

1. $3x$

$3(3) = \boxed{9}$

Evaluating Expressions

Evaluate means "to find the value of"

Be sure to use parentheses when substituting values in place of variables

Good	Bad
2x+3, where x=3	2x+3, where x=3
2(3)+3	23+3
6+3=9	26

2. $5y^2$

$5(2)^2 = 5(4) = \boxed{20}$

3. $-2x + y$

$-2(3) + 2$

$-6 + 2 = \boxed{-4}$

4. $2(x + z)$

$2(3 + \frac{1}{2}) = 2(3\frac{1}{2})$

$= \boxed{7}$

5. xyz

$3 \cdot 2 \cdot \frac{1}{2}$

$6 \cdot \frac{1}{2} = \boxed{3}$

6. $yz - x$

$2(\frac{1}{2}) - 3$

$1 - 3 = \boxed{-2}$

7. $2x + 3y - 8z$

$2(3) + 3(2) - 8(\frac{1}{2})$

$6 + 6 - 4$

$12 - 4 = \boxed{8}$

8. $12z - (x + y)$

$12(\frac{1}{2}) - (3+2)$

$12(\frac{1}{2}) - 5$

$6 - 5 = \boxed{1}$

9. $\frac{yz}{2}$

$\frac{2(\frac{1}{2})}{2} = \boxed{\frac{1}{2}}$

10. $2x(y + z)$

$2(3) \cdot (2 + \frac{1}{2})$

$6(2\frac{1}{2}) = \boxed{15}$

Distributive Property and Combining Like Terms

$a(b+c) = ab+ac$
$a(b-c) = ab-ac$
where a, b, and c are Real Numbers

$4a + 5 + 2a - 3$
$= 6a + 2$

NOTE: When distribution and combining like terms is in one expression you do the distribution first. ☺

1. $5x + 2x + 9 + 1$ $= 7x + 10$	2. $4y + 7x + 2y + 8x$ $= 6y + 15x$
3. $10n - 2n + 9 - 4$ $= 8n + 5$	4. $11m + 7n - 9m + 2n$ $= 2m + 9n$
5. $4(2x + 1)$ $= 8x + 4$	6. $3(x + 2) + 5$ $3x + 6 + 5$ $= 3x + 11$
7. $-2(3x + 5)$ $= -6x - 10$	8. $4 - 7(3x + 1)$ $4 - 21x - 7$ $= -21x - 3$
9. $-4(2x - 3)$ $= -8x + 12$	10. $2(5x + 3) + 3(2x + 1)$ $10x + 6 + 6x + 3$ $= 16x + 9$

Solving Proportions

SOLVING THE PROPORTION:

When solving proportions, follow these rules:

1. **Cross multiply.**
2. **Divide BOTH sides by the number connected to the variable.**
3. **Check the answer to see if it makes a true proportion.**

Problem: $\frac{52}{4} = \frac{n}{7}$

$4 \times n = 52 \times 7$

Which number is connected to the variable? → $\frac{4n}{4} = \frac{364}{4}$ n = 91 miles

Since the 4 is connected to the variable, DIVIDE both sides by the 4.

$4 \div 4 = 1$; therefore you are left with "n" on one side.

$364 \div 4 = 91$

1. $\frac{x}{7} = \frac{15}{21}$

$21x = 105$

$\boxed{x=5}$

2. $\frac{x}{-3} = \frac{8}{12}$

$\frac{12x}{12} = \frac{-24}{12}$

$\boxed{x=-2}$

3. $\frac{6}{15} = \frac{14}{x}$

$\frac{6x}{6} = \frac{210}{6} = \boxed{x=35}$

4. $\frac{x}{2.5} = \frac{6}{7.5}$

$\frac{7.5x}{7.5} = \frac{15}{7.5} = \boxed{x=2}$

5. $\frac{0.6}{1.2} = \frac{15}{n}$

$\frac{0.6n}{0.6} = \frac{18}{0.6} = \boxed{n=30}$

6. $\frac{x+1}{4} = \frac{5}{2}$

$2(x+1) = 20$

$2x+2 = 20$

$-2 \quad -2$

$\frac{2x}{2} = \frac{18}{2}$

$\boxed{x=9}$

7. $\frac{2x+3}{18} = \frac{2}{4}$

$4(2x+3) = 36$

$8x+12 = 36$

$\frac{8x}{8} = \frac{24}{8}$

$\boxed{x=3}$

8. $\frac{2}{0.1} = \frac{x}{0.5}$

$\frac{1}{.1} = \frac{.1x}{.1}$

$\boxed{x=10}$

9. $\frac{y-1}{4} = \frac{2y+6}{6}$

$6(y-1) = 4(2y+6)$

$6y-6 = 8y+24$

$-6 = 2y+24$

$\frac{-30}{2} = \frac{2y}{2}$

$\boxed{y=-15}$

10. $\frac{3+y}{-4} = \frac{y}{8}$

$8(3+y) = -4y$

$24+8y = -4y$

$\frac{24}{-12} = \frac{-12y}{-12}$

$\boxed{y=-2}$

Solving Equations

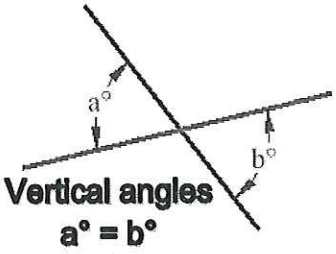
$x - 3 = 7$
$+3 \quad +3$
$x + 0 = 10$
$x = 10$

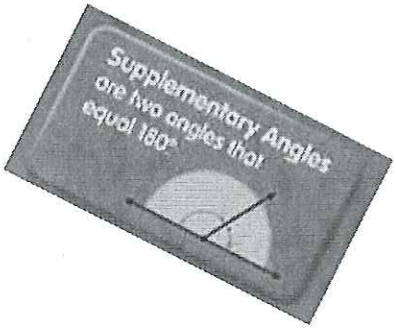
$9x + 3 = 21$
$-3 \quad -3$
$\frac{9x}{9} = \frac{18}{9}$
$x = 2$

$6x + 15 = 3x + 8$
$-3x \quad -3x$
$3x + 15 = 8$
$-15 \quad -15$
$3x = -7$
$\frac{3x}{3} = \frac{-7}{3}$
$x = \frac{-7}{3}$

1. $x + 3 = 5$ $-3 \quad -3$ $\boxed{x = 2}$	2. $x - 7 = 13$ $+7 \quad +7$ $\boxed{x = 20}$
3. $\frac{2x}{2} = \frac{14}{2}$ $\boxed{x = 7}$	4. $4 \cdot \frac{x}{4} = 11 \cdot 4$ $\boxed{x = 44}$
5. $2x - 5 = 15$ $+5 \quad +5$ $\frac{2x}{2} = \frac{20}{2}$ $\boxed{x = 10}$	6. $\frac{x}{5} - 3 = 9$ $+3 \quad +3$ $5 \cdot \frac{x}{5} = 12 \cdot 5$ $\boxed{x = 60}$
7. $2(x - 1) = 12$ $2x - 2 = 12$ $+2 \quad +2$ $\frac{2x}{2} = \frac{14}{2}$ $\boxed{x = 7}$	8. $4x - 9 = 6x - 17$ $+9 \quad +9$ $4x = 6x - 8$ $-6x \quad -6x$ $\frac{-2x}{-2} = \frac{-8}{-2}$ $\boxed{x = 4}$
9. $4(2x + 1) = 3(4x - 2)$ $8x + 4 = 12x - 6$ $4 = 4x - 6$ $\frac{10}{4} = \frac{4x}{4}$ $\boxed{x = 2.5}$	10. $2(3x - 1) + 4 = -4(2x - 3)$ $6x - 2 + 4 = -8x + 12$ $6x + 2 = -8x + 12$ $14x + 2 = 12$ $\frac{14x}{14} = \frac{10}{14}$ $\boxed{x = 5/7}$

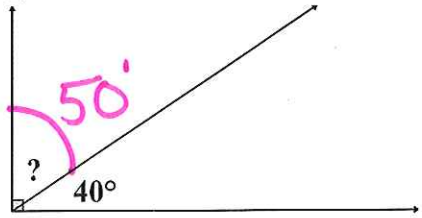
Angles -





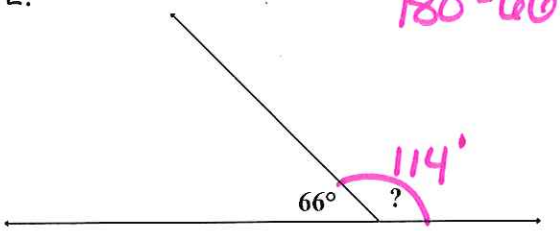
Find the missing angle measure or variable.

1.



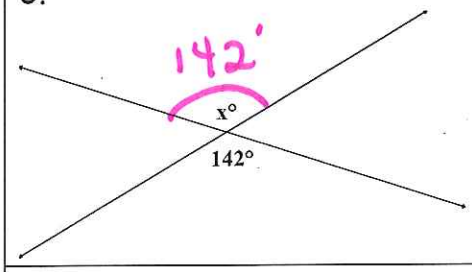
$90 - 40 = 50$

2.

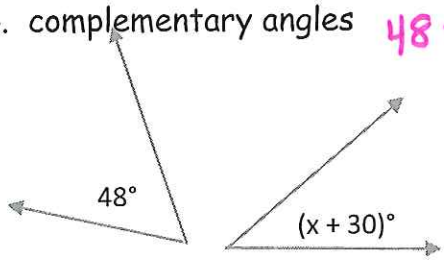


$180 - 66 = 114$

3.



4. complementary angles

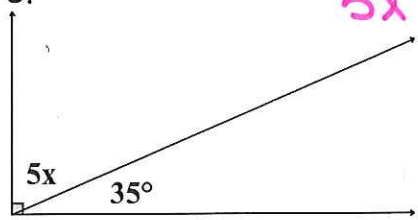


$48 + x + 30 = 90$

$x + 78 = 90$

$\boxed{x = 12}$

5.

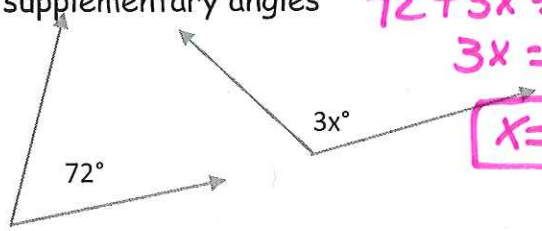


$5x + 35 = 90$

$5x = 55$

$\boxed{x = 11}$

6. supplementary angles

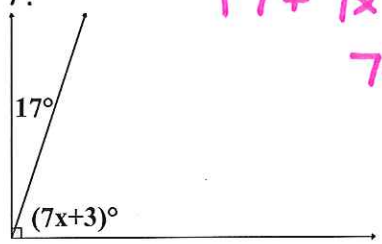


$72 + 3x = 180$

$3x = 108$

$\boxed{x = 36}$

7.



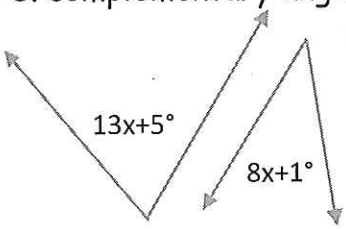
$17 + 7x + 3 = 90$

$7x + 20 = 90$

$7x = 70$

$\boxed{x = 10}$

8. complementary angles



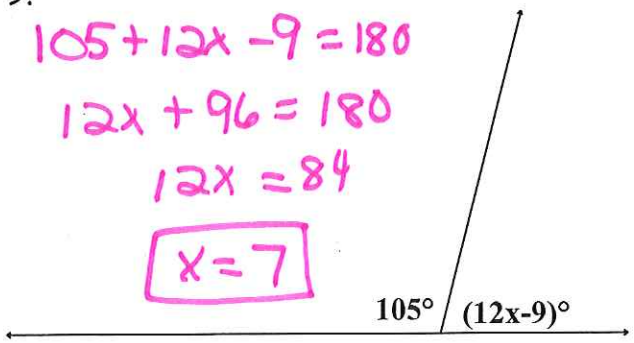
$13x + 5 + 8x + 1 = 90$

$21x + 6 = 90$

$21x = 84$

$\boxed{x = 4}$

9.



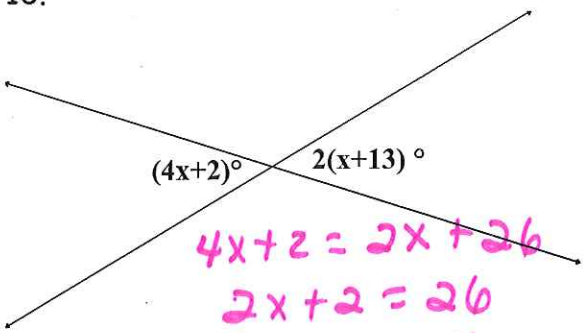
$105 + 12x - 9 = 180$

$12x + 96 = 180$

$12x = 84$

$\boxed{x = 7}$

10.



$4x + 2 = 2x + 26$

$2x + 2 = 26$

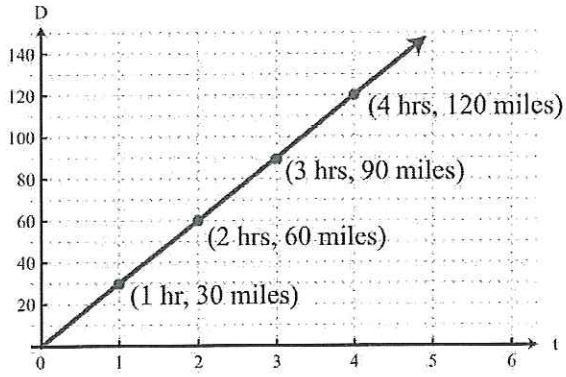
$2x = 24$

$\boxed{x = 12}$

Direct Variation

Joann travels 30 miles per every hour she is driving.

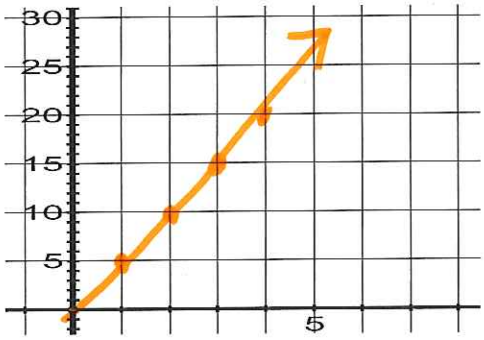
x	y = 30x	y
1	Y = 30(1)	30
2	Y = 30(2)	60
3	Y = 30(3)	90
4	Y = 30(4)	120



For each of the following - complete the table and graph.

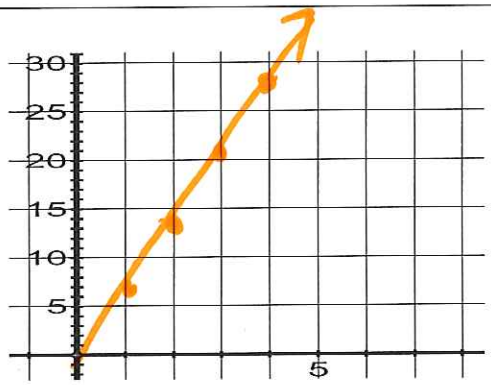
1.

x	y = 5x	y
1	y=5(1)	5
2	y=5(2)	10
3	y=5(3)	15
4	y=5(4)	20



2.

x	y = 7x	y
1	y=7(1)	7
2	y=7(2)	14
3	y=7(3)	21
4	y=7(4)	28



3.

x	y = 2x	y
1	y=2(1)	2
2	y=2(2)	4
3	y=2(3)	6
4	y=2(4)	8