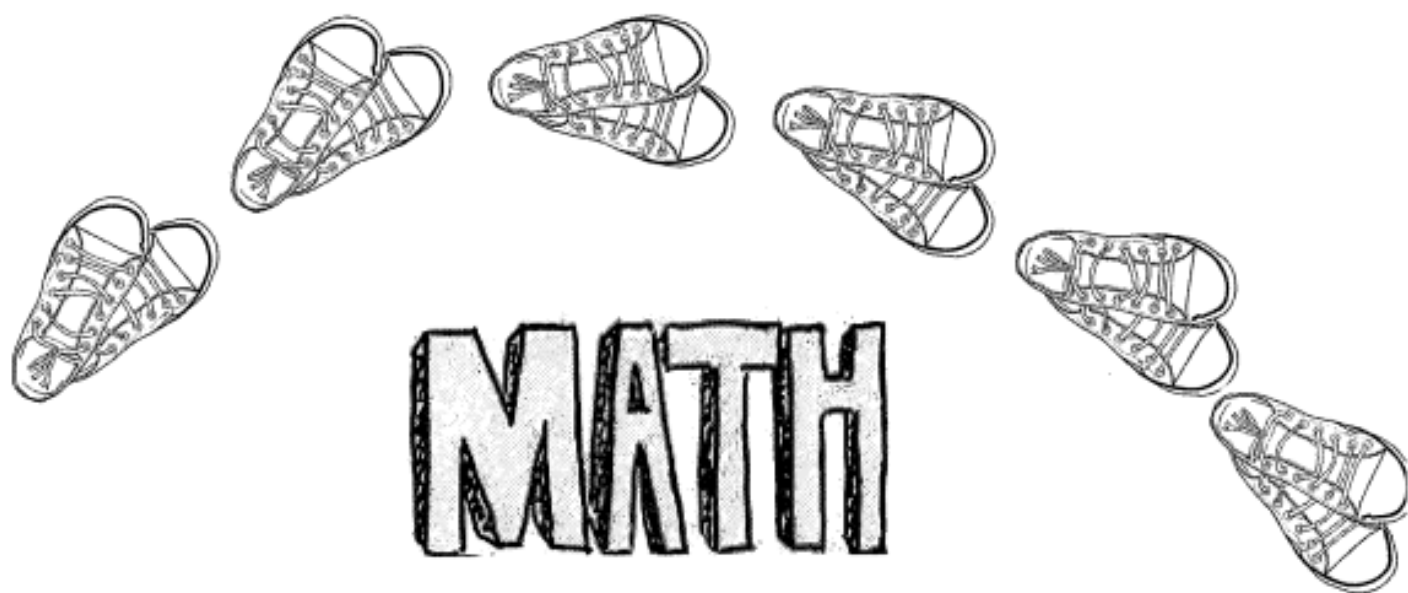


8th Grade
Summer 2025 Math Packet



Name _____

Please complete this packet and turn it in on the
first day of school on September 2nd, 2025
to receive a special treat.

8th Grade Summer Math Packet Instructions

1. There are 9 weekly review sheets in this packet. Each sheet focuses on different topics that you learned in earlier grades. Your goal is to complete 1 sheet per week. **PLEASE SHOW ALL OF YOUR WORK!**
2. After completing a sheet, rate your understanding of each week's topics by circling the image on the following page.
 - Smiley Face - You understand ALL the concepts for that week and would be able to teach it to another student.
 - Neutral Face - You understand the concepts for the most part.
 - Confused Face - You do not understand these concepts and need help reviewing.

What do I do if I don't understand something?

- use your resources (online help sites, videos, parents, siblings, etc.)
- all sites referenced in this packet are linked on the Cooper webpage
- make a note of the topic/question on the rating sheet and ask your teacher to review it during the first week of school

What happens next?

- Bring your packet to the first day of school on Tuesday, September 3 to receive a special treat.
- You will be reviewing the packet during your first week of 8th grade math class.

An **ANSWER KEY** for each week of this packet has been posted on the Cooper webpage. Please use this key to check your work and to help you if you get stuck.

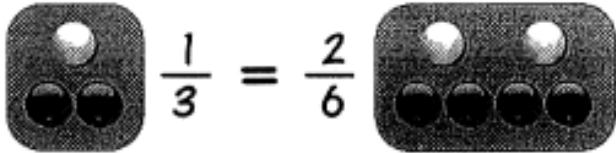
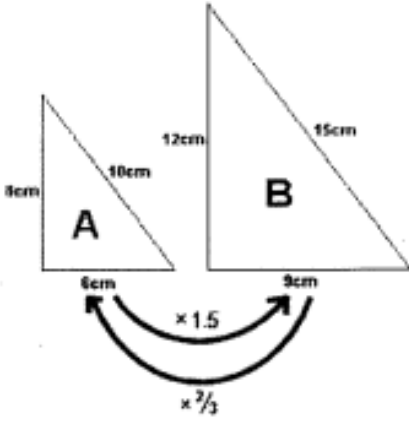
8th Grade Summer Math Packet

Name _____

Team: _____

As you work through the packet, please circle the image that best reflects your understanding of each of the following topics:

Week #	Topic	My Rating		
1	• Scale Factor and Proportions			
2	• Integer Operations			
3	• Adding/Subtracting/Multiplying/Dividing Fractions			
4	• Order of Operations			
5	• Solving 2 Step Equations			
6	• Solving Equations With x on Both Sides			
7	• Distributing and Combining Like Terms			
8	• Writing Linear Equations from Tables			
9	• Making a Table and Graph from a Linear Equation			

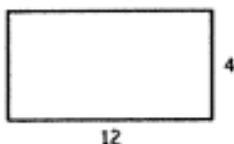
Skill #1: Scale Factor	Skill #2: Proportions
Scale factor is the number used to multiply the lengths of a figure to stretch or shrink it to a similar image.	A proportion is an equation stating that two ratios are equal.  $\frac{1}{3} = \frac{2}{6}$
	$\frac{x}{10} = \frac{4}{5}$ In order to identify an unknown variable: 1. Find the scale factor between the known quantities. ($5 \times \underline{2} = 10$) 2. Use the scale factor to find the value of the variable. ($4 \times \underline{2} = x$ so $x = 8$)

Check out these links for more practice...

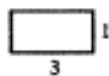
- <https://www.mathsisfun.com/algebra/proportions.html>
- <http://www.ixl.com/math/grade-7/scale-drawings-and-scale-factors>

Now try these problems

Original Rectangle



Scaled Rectangle



1. What is the scale factor from the original rectangle to the scaled rectangle?

2. What is the scale factor from the scaled rectangle to the original rectangle?

Solve for x in each proportion.

3. $\frac{8}{11} = \frac{16}{x}$

4. $\frac{x}{10} = \frac{10}{25}$

Check your answers on the back of this sheet...

1. $\frac{1}{4}$

2. 4

3. $x = 22$

4. $x = 4$

Great Work! Now it's time to practice.

1. The triangles at the right are similar.

- a. Use the side lengths of triangle DEF and the fact that the triangles are similar to find the lengths of sides AC and AB and the measure of angle E .

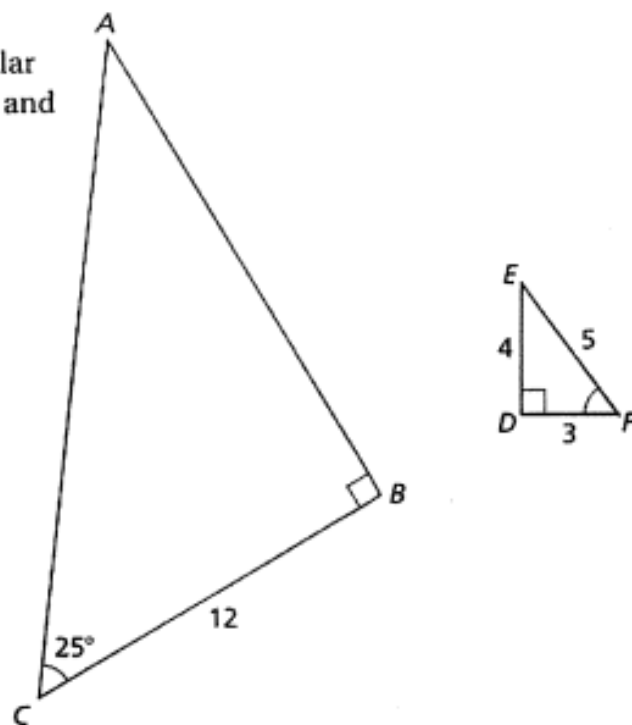
side $AC =$ _____

side $AB =$ _____

angle $E =$ _____

- b. What is the scale factor from triangle DEF to triangle ABC ?

- c. What is the scale factor from triangle ABC to triangle DEF ?



2. Find the value of x that will make each proportion true.

a. $\frac{3}{4} = \frac{24}{x}$

b. $\frac{2}{3} = \frac{x}{15}$

c. $\frac{x}{5} = \frac{5}{25}$

d. $\frac{4}{x} = \frac{10}{30}$

(2)

Summer Math Packet
Week #2

Skill #1: Adding & Subtracting Integers	Skill #2: Multiplying & Dividing Integers
ADDITION pos. + pos. = pos. neg. + neg. = neg. pos. + neg OR neg. + pos. = Subtract the numbers and take the sign of the greater number. Examples: $10 + 25 = 35$ $-10 + (-25) = -35$ $10 + (-25) = -15$ $-10 + 25 = 15$	 pos. (pos.) = pos.  neg. (neg.) = pos.  OR  pos. (neg.) = neg. neg. (pos.) = neg.
SUBTRACTION "add the opposite" then follow the rules for adding integers Examples: $10 - 25 \rightarrow 10 + (-25) = -15$ $-10 - (-25) \rightarrow -10 + 25 = 15$ $10 - (-25) \rightarrow 10 + 25 = 35$ $-10 - 25 \rightarrow -10 + (-25) = -35$ Note: A double negative makes a positive.	Examples: $10 (15) = 150$ $150/10 = 15$ $-10 (-15) = 150$ $-150/-10 = 15$ $10 (-15) = -150$ $150/-10 = -15$ $-10 (15) = -150$ $-150/10 = -15$

Check out these links for more practice...

- <http://www.mathgoodies.com/lessons/vol5/addition.html>
- <http://www.mathgoodies.com/lessons/vol5/subtraction.html>
- <http://www.mathgoodies.com/lessons/vol5/multiplication.html>
- http://www.aaamath.com/div65_x2.htm

Now try these problems

1. $46 + (-13)$

2. $-16 + (-2)$

3. $-13 - (-16)$

4. $13 - (-13)$

5. $-12 (-5)$

6. $\frac{30}{-15} =$

Check your answers on the back of this sheet...

1. 33

2. -18

3. 3

4. 26

5. 60

6. -2

Great Work! Now it's time to practice. NO calculator! =)

1.) $-37 + 22 =$ _____

2.) $4 - (-14) =$ _____

3.) $16 - 25 =$ _____

4.) $-25 \div -5 =$ _____

5.) $12 (-11) =$ _____

6.) $56 \div -7 =$ _____

7.) $-3 - (-9) =$ _____

8.) $-19 + (-21) =$ _____

9.) $-6 (-6) =$ _____

10.) $-4 (8) =$ _____

11.) $\frac{-144}{-12} =$ _____

12.) $-9 + 17 =$ _____

Summer Math Packet
Week #3

Skill: Fractions

Rules for Fractions

If adding with a mixed number, change to an improper fraction first.		
Addition: (same denominators)		
$\frac{A}{B} + \frac{C}{B}$	$=$	$\frac{A + C}{B}$
Subtraction: (same denominators)		
$\frac{A}{B} - \frac{C}{B}$	$=$	$\frac{A - C}{B}$
Multiplication:		
$\frac{A}{B} \times \frac{C}{D}$	$=$	$\frac{AC}{BD}$
Addition: (different denominators)		
$\frac{A}{B} + \frac{C}{D}$	$=$	$\frac{AD}{BD} + \frac{BC}{BD} = \frac{AD + BC}{BD}$
Subtraction: (different denominators)		
$\frac{A}{B} - \frac{C}{D}$	$=$	$\frac{AD}{BD} - \frac{BC}{BD} = \frac{AD - BC}{BD}$
Division:		
$\frac{A}{B} \div \frac{C}{D}$	$=$	$\frac{A}{B} \times \frac{D}{C} = \frac{AD}{BC}$

Check out these links for more practice...

- www.khanacademy.org/math/cc-fifth-grade-math/cc-5th-fractions-topic/cc-5th-add-sub-fractions/e/adding-fractions

Now try these problems

1. $\frac{3}{5} + \frac{1}{5}$

2. $\frac{5}{7} - \frac{2}{7}$

3. $\frac{2}{4} \times \frac{1}{9}$

4. $\frac{3}{7} + \frac{4}{5}$

5. $\frac{5}{6} - \frac{2}{5}$

6. $\frac{2}{3} \div \frac{3}{2}$

Check your answers on the back of this sheet...

1. $\frac{4}{5}$ 2. $\frac{3}{7}$ 3. $\frac{2}{36}$ or $\frac{1}{18}$ 4. $\frac{43}{35}$ or 1 and $\frac{8}{35}$
5. $\frac{13}{30}$ 6. $\frac{4}{9}$

Great Work! Now it's time to practice.

1. $\frac{3}{2} + \frac{6}{2}$
2. $\frac{8}{12} + \frac{5}{12}$
3. $\frac{9}{7} - \frac{4}{7}$
4. $\frac{12}{5} - \frac{8}{5}$
5. $\frac{4}{5} \times \frac{2}{3}$
6. $\frac{5}{8} \times \frac{6}{9}$
7. $\frac{3}{2} + \frac{4}{3}$
8. $\frac{7}{8} + \frac{2}{5}$
9. $\frac{3}{4} + \frac{1}{6}$
10. $\frac{3}{5} - \frac{1}{6}$
11. $\frac{2}{3} - \frac{2}{7}$
12. $\frac{3}{5} \div \frac{2}{3}$
13. $\frac{1}{4} \div \frac{3}{5}$
14. $\frac{7}{5} \div \frac{6}{5}$
15. $\frac{9}{12} \div \frac{3}{4}$

Summer Math Packet
Week #4

Skill: Order of Operations

Following the Order of Operations

1st Parentheses and brackets

2nd Exponents

3rd Multiply or Divide from left to right.

4th Add or Subtract from left to right.

Please

Excuse

My

Dear

Aunt

Sally

$$\begin{aligned}
 & 8 \times 2 + 3 - 10 \div 5 + 6 - 3 \times 4 \\
 & \underline{\quad} \quad \quad \quad \underline{\quad} \quad \quad \quad \underline{\quad} \\
 & = 16 + 3 - 2 + 6 - 12 \\
 & = 16 + 3 - 2 + 6 - 12 \\
 & \quad \quad \underline{\quad} \quad \quad \quad \underline{\quad} \\
 & \quad = 19 - 2 + 6 - 12 \\
 & \quad \quad \quad \underline{\quad} \quad \quad \quad \underline{\quad} \\
 & \quad \quad = 17 + 6 - 12 \\
 & \quad \quad \quad \underline{\quad} \quad \quad \quad \underline{\quad} \\
 & \quad \quad = 23 - 12 \\
 & \quad \quad \quad \underline{\quad} \\
 & \quad \quad = 11
 \end{aligned}$$

Check out these links for more practice...

- <https://www.khanacademy.org/math/pre-algebra/order-of-operations>

Now try these problems

1. $7 + (6 \times 5^2 + 3)$

2. $3 + 6 \times (5 + 4) \div 3 - 7$

3. $(8-1) \times (5-4)$

4. $9 - (3 - 8 \div 4 + (1 \times 1))$

5. $(8-7) \times (2+1) + 1$

6. $16 \div 2[8 - 3(4 - 2)] + 1$

Check your answers on the back of this sheet...

1. 160

2. 14

3. 7

4. 8

5. 4

6. 17

Great Work! Now it's time to practice.

a. $5 + (7 + 1^2) - 2$

b. $(6 - 9) - 3$

c. $1 + (3 + 6) + 9 + 9$

d. $8^2 \times (8 + 2^2) \div 6 \times 3$

e. $(2 + 8 \times 5 - 4) \times 4$

f. $(2 + 7^2) - 9^2 - 8$

g. $(4 - 2 \times 2) \div 5 \times 4$

h. $(9^2 \times 9 - 9) \times 3^2 + 5$

Summer Math Packet
Week #5

Skill:
2-Step Equations

Steps:

- 1) Decide whether to use addition or subtraction to isolate the variable term.
- 2) Add or subtract the constant on both sides of the equation.
- 3) Eliminate the variable's coefficient through division or multiplication.

Example:

$$3x + 4 = 15$$

$$3x + 4 = 15$$

$$\underline{-4} \quad \underline{-4}$$

$$3x = 11$$

$$\underline{3x} = \underline{11}$$

$$3 \quad 3$$

$$x = \frac{11}{3}$$

Check out these links for more practice...

- <http://tinyurl.com/omd32c2>
- <http://tinyurl.com/yjrgdpgb>

Now try these problems

1. $3b + 9 = -18$

2. $3z - 2 = -26$

3. $2x + 8 = 4$

4. $-2y - 6 = 6$

5. $2a + 9 = 11$

6. $3y - 5 = -32$

Check your answers on the back of this sheet...

$$1. b = -9$$

$$6. y = -9$$

$$2. z = -8$$

$$3. x = -2$$

$$4. y = -6$$

$$5. a = 1$$

Great Work! Now it's time to practice.

$$1.) 5x + 9 = 39$$

$$2.) 9 - c = -13$$

$$3.) 9p + 11 = -7$$

$$4.) 6 - 2d = 42$$

$$5.) 2m + 5 = 17$$

Summer Math Packet
Week #6

Skill: Solving Equations With a Variable on Both Sides	
Work to get the variable isolated on one side of the equation and the number on the other side of the equation. Remember what you do to 1 side of the equation you have to do to the other side of the equation too!	Example: $-2x + 8 = -6x - 4$
1. Use addition or subtraction to move the variable to one side. Then simplify like terms.	$+2x \qquad +2x$ $8 = -4x - 4$
2. Use addition or subtraction to move the number to the opposite side of step 1. Then simplify like terms.	$+4 \qquad +4$ $12 = -4x$
3. Use multiplication or division so that the variable has a coefficient of +1.	$\frac{12}{-4} = \frac{-4x}{-4}$ $-3 = x$
4. Check your solution by substituting your answer back into your original equation!	$-2(-3) + 8 = -6(-3)$ $6 + 8 = 18 - 4$ $14 = 14$

Check out this link for more practice...

<https://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/basic-equation-practice/v/equations-3>

Now try these problems

1. $7 - 2x = x - 14$

2. $3y + 8 = 2y - 7$

3. $6 - 4x = 16 - 9x$

4. $3.6y = 5.4 + 3.3y$

Check your answers on the back of this sheet . . .

