

Name: _____ Class: _____

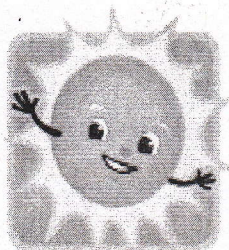
For the 2015-2016 School Year

Eighth Grade Summer Math Packet

- This packet is designed to help you retain the information you learned in 7th grade math.
- It would be most helpful if you work on it in August (prior to the school, to help you prepare for 8th grade).
- The packet is due **Friday September 18th** and will be accepted until **Tuesday September 22nd**.
- The most important topics to review further for next year are INTEGERS (know your rules) and solving one-step equations such as $126 = -14k$. You must also know how to operate with fractions and decimals as well in addition to rounding answers to any given place value.
- Use websites to help you strengthen your skills in these areas!
(ex. www.math.com , www.khanacademy.org , www.mathisfun.com, <http://www.purplemath.com>)

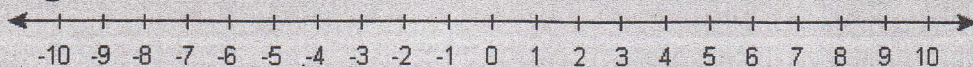
****NOTE: PLEASE CHECK YOUR PRINTED OUT PACKET WITH THE ONE YOU SEE ON YOUR COMPUTER AS SOME SYMBOLS SOMETIMES DO NOT PRINT CORRECTLY (especially on Mac computers). ****

Have a Wonderful Summer!



Your eighth grade teachers look forward to working with you next year.

Topic: Integers



Examples:

Addition	Subtraction	Multiplication	Division
<i>Same signs:</i> Add & keep sign $+6 + +5 = +11$ $-8 + -2 = -10$	<i>Keep-Change-Opposite</i> $+10 - -8 = +10 + +8 = 18$ $-5 - +12 = -5 + -12$	<i>Same signs:</i> Positive product $(+7)(+8) = +56$ $(-2)(-6) = +12$	<i>Same signs:</i> Positive quotient $+42 / +6 = +7$ $-24 / -8 = +3$
<i>Different signs:</i> Subtract & take sign of larger value $+9 + -5 = +4$ $-6 + +1 = -5$	$-20 - -8 = -20 + +8 = -12$	<i>Different signs:</i> Negative product $(+3)(-9) = -27$ $(-5)(+4) = -20$	<i>Different signs:</i> Negative quotient $+56 / -7 = -8$ $-50 / +2 = -25$

Recall the **order of operations**:

- 1 - **P**arentheses (or grouping symbols)
- 2 - **E**xponents
- 3 - **M**ultiplication / **D**ivision (left to right)
- 4 - **A**ddition / **S**ubtraction (left to right)

Find each answer.

1. $-12 + (-7) =$ _____

2. $-25 + 18 =$ _____

3. $2 + (-25) =$ _____

4. $-28 - (-8) =$ _____

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

6. $-21 - 4 =$ _____

7. $(-9)(-8) =$ _____

8. $(2)(-12) =$ _____

9. $-35 / -7 =$ _____

10. $-48 / +8 =$ _____

11. $(-2)(+6)(-5) =$ _____

12. $-30 + \frac{24}{6} \cdot (-2) =$ _____

13. $\frac{16}{4} + 2 \cdot (-8) =$ _____

14. $-3(1 - 8) + 2^3 =$ _____

Answers:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

Topic: Rationals

Multiplying Fractions and Mixed Numbers

- 1) **Change any mixed numbers to improper fractions**
- 2) **Cross – cancel *any* numerator with *any* denominator** by dividing each by a *common factor*
- 3) Multiply numerator by numerator and denominator by denominator
- 4) Simplify your answer (make it a mixed number if you can)

Dividing Fractions and Mixed Numbers

- 1) **Change any mixed numbers to improper fractions**
- 2) Remember Keep-Change-Flip: keep the first fraction, change the division sign to a multiplication sign, and flip the second fraction
- 3) Multiply numerator by numerator and denominator by denominator
- 4) Simplify your answer (make it a mixed number if you can)

Adding and Subtracting Fractions and Mixed Numbers

- 1) Check to see if the denominators are the same; if not, *find a common denominator*
- 2) Now add or subtract the fractions – remember, **keep the denominator!**
- 3) Add or subtract the whole numbers
- 4) Simplify the fraction
- 5) Rewrite the sum or difference

1) $3\frac{2}{3} + 5\frac{1}{4} =$

2) $8\frac{4}{5} - 3\frac{2}{3} =$

3) $5\frac{2}{11} - 2\frac{1}{2} =$

Answers:

1. _____

2. _____

4) $12 - 4\frac{3}{5} =$

5) $-2\frac{1}{3} - 5\frac{3}{4} =$

6) $-5\frac{5}{6} + 12\frac{3}{8} =$

3. _____

4. _____

7) $3\frac{1}{3} \cdot 7\frac{1}{2} =$

8) $\frac{3\frac{1}{3}}{-\frac{5}{6}} =$

9) $\frac{-6\frac{2}{3}}{-3\frac{3}{4}} =$

5. _____

6. _____

7. _____

8. _____

9. _____

Topic: Combining Like Terms and Applying the Distributive Property

In algebraic expressions, like terms are terms that contain the same variables raised to the same power. Only the coefficients of like terms may be different.

In order to **combine like terms**, we add or subtract the numerical coefficients of the like terms using the Distributive Property: $ax + bx = (a + b)x$.

Examples:

- $2x + 9x = (2 + 9)x = 11x$
- $12y - 7y = (12 - 7)y = 5y$
- $5x + 8 - 2x + 7 = 3x + 15$

Here, the like terms are: $5x$ and $-2x = 3x$
and: $8 + 7 = 15$

The **Distributive Property** of multiplication over addition/subtraction is frequently used in Algebra:

Examples:

- $7(2x + 9) = 7 \cdot 2x + 7 \cdot 9 = 14x + 63$
- $4(6 - 5x) = 4(6) - 4(5x) = 24 - 20x$

Simplify each expression by combining like terms.

1. $8y + 2y$

2. $10 - 6y + 4y + 9 =$

3. $3x + 7 - 2x =$

4. $8n - 7y - 12n + 5 - 3y =$

Apply the distributive property and write your answer in simplest form.

5. $7(x - 4) =$

6. $5(4n - 3) =$

7. $-6(3y + 5) =$

8. $-4(8 - 9x) =$

9. $8(3n + 7) - 10n =$

10. $-4(5 + 7y) + 6(2y - 9) =$

Answers:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Topic: Algebra

Solving equations by using the Addition, Subtraction or Multiplication Property of Equality.

Check the solution.

Ex 1: $\frac{1}{2}x + 5 = 9$

$-5 = -5$

$\frac{2}{1} \cdot \frac{1}{2}x = 4 \cdot 2$

$x = 8$

Check: $\frac{1}{2}x + 5 = 9$

$\frac{1}{2}(\frac{8}{1}) + 5 = 9$

$4 + 5 = 9$

$9 = 9$

Ex 2: $7x - 6 - 11x = -14$

$7x - 6 - 11x = -14$

$-4x - 6 = -14$

$+6 + 6$

$\frac{-4x}{-4} = \frac{-8}{-4}$

$x = 2$

Check:

$7x - 6 - 11x = -14$

$7(2) - 6 - 11(2) = -14$

$14 - 6 - 22 = -14$

$8 - 22 = -14$

$-14 = -14$

Translate and evaluate the following equations.

Ex 3: The product of 4 and a number is 28. Ex 4: The quotient of a number and 3 is 15.

$4 \cdot n = 28$

$\frac{4n}{4} = \frac{28}{4}$

$n = 7$

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

$n = 45$

Addition: sum, more than

Multiplication: product

Subtraction: difference, less than

Division: quotient

Solve the following equations. Show your work and check your solution.

1. $2x - 5 = 17$

2. $\frac{1}{3}x - 9 = -12$

3. $5x + 8 = -12$

Check:

Check:

Check:

Apply the distributive property first.

4. $-4x + 8 = 32$

5. $\frac{x}{4} + 8 = 20$

6. $2(x - 7) = 8$

Check:

Check:

Check:

7. $8x - 5 - 6x = 7$

8. $3 = 4x - 10x + 15$

Apply the distributive property first.

9. $6x - (3 + 8x) = -11$

Check:

Check:

Check:

Translate each sentence to an algebraic equation. Then use mental math to find the solution.

Equation

Solution

10. One-half of a number is -12.

11. 6 more than 7 times a number is 41.

12. 5 less than three times a number is 10.

13. 16 increased by twice a number is -24.

Reflection

1. Going into 8th grade math, what do you believe your strengths are?

2. What 7th grade topics were challenging for you?

3. In completing this packet, what topics did you find the easiest to complete?

4. What topics do you think you need more practice with?

5. Tell us something you think your 8th grade math teachers should know about you?
