

EASTAMPTON SCHOOL DISTRICT

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Eastampton Community School Middle School Summer Math Practice For Students Entering Grade 8

Student's Name _____

Dear Parents/Guardians,

The mathematics teachers want all students to be as successful as possible in their middle school math program. This packet has been designed so that students will retain and review their math skills over the summer. The packet is divided into weekly sections. Please monitor your child's progress to ensure that your child doesn't become overwhelmed by doing all the work at once.

Work must be shown for each problem, and the final answer should be recorded on the Answer Sheet provided. **No calculator is permitted in solving the problems.** The completed packet is due Friday, September 20, 2019, and it will be your child's **first test grade of the marking period.**

A link to the packet is located on your child's teacher's web page for your convenience, and in case it gets lost. As always, thanks for your cooperation and support!

ECS Middle School Mathematics Teachers

Top online resources for assistance:

www.khanacademy.org
www.aaamath.com

****Please sign below to verify that your child has completed the packet and all supporting work is shown.****

Parent/Guardian's Signature _____ Date _____

Name _____

Date _____

Refresher Worksheet 1

Working with Signed Numbers

Problems involving temperature and elevation often require operations with signed numbers.

Example 1

Find $-13 + (-32)$.

- Since the numbers have the same sign, start by adding their absolute values.
$$|-13| + |-32| = 13 + 32 = 45$$
- Give the result the sign of the original numbers.
$$-13 + (-32) = -45$$

Find $9 + (-21)$.

- Since the numbers have different signs, subtract the lesser absolute value from the greater.
$$|-21| - |9| = 21 - 9 = 12$$
- Give the result the sign of the number with the greater absolute value.
$$9 + (-21) = -12$$

Find $16 - (-7)$.

- To subtract a signed number, add the opposite.
$$16 - (-7) = 16 + 7 = 23$$

Find $-32 \div 8$.

- The product or quotient of two numbers with different signs is negative.
$$-32 \div 8 = -4$$

Find $-25 \cdot (-5)$.

- The product or quotient of two numbers with the same sign is positive.
$$-25 \cdot (-5) = 125$$

Practice ..

Find each sum or difference.

- $-4 + (-6)$
- $-6.7 + 10.8$
- $65 - (-48)$
- $-48 - 65$
- $3\frac{3}{5} + (-5\frac{7}{10})$
- $-15 - (-24)$
- $-1\frac{1}{4} + \frac{5}{4}$
- $-765 - 478$

Find each product or quotient.

- $-7 \cdot 8$
- $-169 \div -13$
- $\frac{-3}{4} \cdot \frac{-2}{9}$
- $0.48 \div -6$
- $15 \cdot -6$
- $-1,000 \cdot 0.01$
- $-1,000 \div 0.01$
- $-24 \cdot \frac{-1}{8}$

Name _____

Date _____

Refresher Worksheet 4

Using the Distributive Property

The distributive property of multiplication over addition states that $a(b + c) = ab + ac$. The distributive property of multiplication over subtraction states that $a(b - c) = ab - ac$. You can use the distributive properties to rewrite expressions and to simplify calculations.

Example 1

Use the distributive property to expand $t(4 - 2t)$.

- Multiply t by each term inside the parentheses.

$$\begin{aligned} t(4 - 2t) &= t \cdot 4 - t \cdot 2t \\ &= 4t - 2t^2 \end{aligned}$$

Factor $3p^2 - 6p$.

- $3p$ is a factor of both terms, so write both terms as $3p$ times something.
- Apply the distributive property.

$$\begin{aligned} 3p^2 - 6p &= 3p \cdot p - 3p \cdot 2 \\ &= 3p(p - 2) \end{aligned}$$

Use a shortcut to find $7 \cdot 97$.

- Rewrite 97 as a sum or difference of numbers that are easy to multiply by 7.
- Apply the distributive property.

$$\begin{aligned} 7 \cdot 97 &= 7(100 - 3) \\ &= 7 \cdot 100 - 7 \cdot 3 \\ &= 700 - 21 \\ &= 679 \end{aligned}$$

Practice

Expand each expression.

1. $8(n - 4)$

2. $3\left(\frac{2}{3} + \frac{\pi}{3}\right)$

3. $2x(4x - 3)$

4. $11(2a - 3b)$

5. $-5(-2 - n)$

6. $\frac{2}{7}(14p - 7 + 7q)$

7. $a(3b + 4)$

8. $-(12 - 5r)$

Factor each expression.

9. $2x + 3x$

10. $18 - 27y$

11. $s^2 - s$

12. $3a + 4a + 6a$

13. $-6n + 2n^2$

14. $9c + 6 + 12c^2$

15. $-5 - 10t$

16. $8g^2 + 12g$

Use the distributive property to help you do each calculation mentally.

17. $6 \cdot 41$

18. $7 \cdot 28$

19. $12 \cdot 102$

20. $6 \cdot 65$

Name _____

Date _____

Refresher Worksheet 5

Solving Equations

You can often solve an equation by doing the same thing to both sides. Try to make the equation simpler at each step, until the variable is alone on one side.

Example 1

Solve $3x + 12 = 6x - 9$.

- Subtract $3x$ from both sides.

$$\begin{aligned} 3x + 12 &= 6x - 9 \\ 3x - 3x + 12 &= 6x - 3x - 9 \\ 12 &= 3x - 9 \end{aligned}$$

- Add 9 to both sides.

$$\begin{aligned} 12 + 9 &= 3x - 9 + 9 \\ 21 &= 3x \end{aligned}$$

- Divide both sides by 3.

$$\begin{aligned} \frac{21}{3} &= \frac{3x}{3} \\ 7 &= x \end{aligned}$$

The solution is 7.

- Check the solution by substituting it into both sides of the equation.

$$\begin{aligned} 3(7) + 12 &= 21 + 12 = 33 \\ 6(7) - 9 &= 42 - 9 = 33 \end{aligned}$$

The solution checks.

Practice

Solve each equation.

1. $-17z = 68$

2. $43 - p = 25$

3. $\frac{3}{8}t = \frac{2}{7}$

4. $6 + 2t = 62 - 2t$

5. $8 - x = -2x - 2$

6. $15 = \frac{-y}{3}$

7. $\frac{3}{5} = \frac{x}{12}$

8. $2.4x + 3 = 3x$

9. $\frac{-3}{4}p + \frac{4}{3} = 2p + \frac{1}{9}$

10. $v + 7 - 4v = -20$

11. $-4r - 3r + 6 = 2 - 8r + 2$

12. $\frac{x+3}{4} = x - 12$

Due 9/25/19

Name _____ Date _____

Refresher Worksheet 6

Writing and Simplifying Expressions and Equations

Many problems can be solved by writing, simplifying, and solving equations.

Example 1

Ron, Don, and Jon collect CDs. Don has 5 fewer CDs than twice the number Ron has. Jon has 6 more CDs than both the other boys put together. Write expressions for the number of CDs each boy has.

- Let R be the number Ron has. Ron: R
- Don has twice as many as Ron, minus 5. Don: $2R - 5$
- Jon has the sum of the number the other boys have, plus 6. Jon: $R + (2R - 5) + 6 = 3R - 5 + 6 = 3R + 1$

Together, the boys have 86 CDs. Write, simplify, and solve an equation to find the number of CDs each boy has.

- The sum of the three expressions equals 86. $R + (2R - 5) + (3R + 1) = 86$
 - Remove parentheses and combine like terms. $6R - 4 = 86$
 - Solve the equation by doing the same thing to both sides. $6R = 90$
 $R = 15$
- Ron has 15, Don has 25, and Jon has 46.

Practice

Simplify each expression.

1. $3x - 12 - 2x - x + 5$ 2. $13 - (z + 12)$ 3. $-3t + 3 - 2s - 4t + s$

4. Eric said, "If you multiply the number of cars I have by 8 and then subtract 10, you get the same number as when you triple the number of cars I have and add 5." Write and solve an equation to find the number of cars Eric has.

5. A pen costs three times as much as a pencil. A pad of paper costs 75¢ more than a pen. The total cost for four pencils, two pens, and a pad of paper is \$3.35. Write, simplify, and solve an equation to find the cost of each item.

Name _____

Date _____

Refresher Worksheet 7

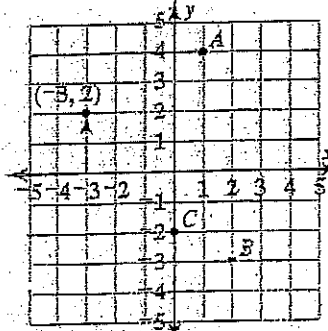
Plotting Points in Four Quadrants

The coordinates of a point in the plane are given as an ordered pair. To locate the point (a, b) , start at a on the x -axis. Then, move straight up or down until you are even with b on the y -axis.

Example 1

Give the coordinates of Points A, B, and C. Then, plot the point with coordinates $(-3, 2)$.

- The ordered pair $(1, 4)$ describes Point A.
- The ordered pair $(2, -3)$ describes Point B.
- The ordered pair $(0, -2)$ describes Point C.
- To plot $(-3, 2)$, start at 3 on the x -axis and then move up until you are even with 2 on the y -axis.



Practice

Tell which point has the given coordinates.

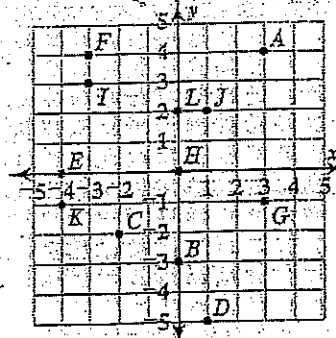
1. $(1, 2)$ 2. $(0, -3)$ 3. $(-2, -2)$

4. $(3, 4)$ 5. $(3, -1)$ 6. $(0, 2)$

Give the coordinates of each point.

7. D 8. E 9. F

10. H 11. I 12. K



Due 9/22/19

Skill: Order of Operations With Integers

Find the value of each expression.

1) $(8 + 2) \times 9$

2) $5 - 1 \div 4$

3) $(6 + 3) \div 18$

4) $80 - 6 \times 7$

5) $4 \times 6 + 3$

6) $4 \times (6 + 3)$

7) $35 - 6 \times 5$

8) $8 \div 3 + 6$

9) $(-4)^2 + 10 - 2$

10) $-4^2 + 10 \cdot 2$

11) $(5 - 3)^2 + 8$

12) $5 \cdot 3^2 + 8$

13) $9 + (7 - 4)^2$

14) $-9 + 7 - 4^2$

6

Due 9/22/19

Please write your final answer on this sheet.

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