

8th Grade Summer Math Packet



**Must be completed and returned by the first
day of school**

Student's Name

EIGHTH GRADE SUPPLY LIST

Dear Eighth Grade Parents,

Below is a list of supplies that students will need for the upcoming school year for Mathematics. Please **do not** label **any** of the supplies with your child's name or subject. We will label everything in class together. The following supplies are due on the first day of school. See you in September!

Sincerely,
Miss Dora

Mathematics

1 1-Subject Notebook

1 box of pencils

2 Folders

1 Texas Instruments Scientific Calculator (TI-30X-A)

June 2018

Dear Incoming 8th Grade Students,

Here is your 8th grade Summer Math packet containing your assignments. The worksheets included in this packet are to reinforce the skills and math concepts that you have learned this year as well as introduce you to some new topics to better prepare you for mathematics next year! I strongly encourage you to complete a few problems each day so you do not complete the packet in one sitting. Do not use a calculator. It is important that you try to solve each problem and show all work. If there is not enough space on the worksheet, you may complete the problem on loose-leaf, just be sure to label the question you are working on. If you do not understand the problem fully, just try your best. In addition to the packet, continue to review your multiplication tables up to and including 12.

The math packet is due on the 1st day of school!

Enjoy the Summer!
Ms. Dora

Date completed: _____

Parent/Guardian Signature: _____

Student Signature: _____

Name: _____ Date: _____

RATIOS AND PROPORTIONAL RELATIONSHIPS – Constant of Proportionality

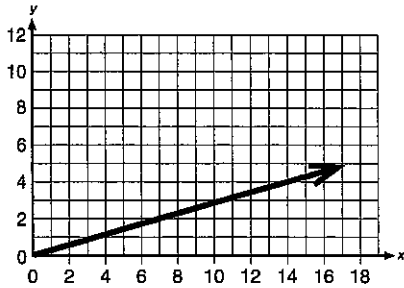
CCSS Math Content 7.RP.A.2b: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

SHARPEN YOUR SKILLS:

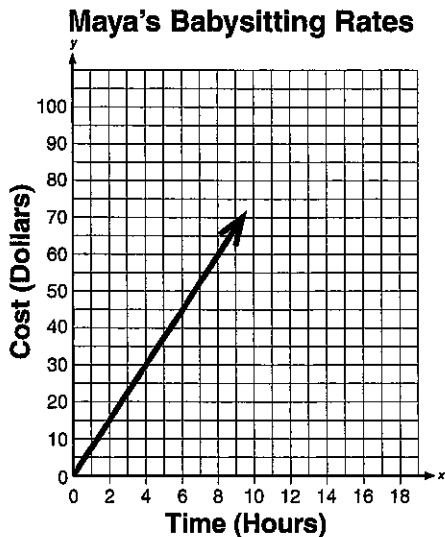
1. Identify the constant of proportionality for the quantities given in the table. Explain how you determined your answer.

<i>x</i>	2	3	6	10	14
<i>y</i>	16	24	48	80	112

2. Identify the constant of proportionality for the quantities given in the graph. Explain how you determined your answer.



APPLY YOUR SKILLS:



Use the graph to determine the amount Maya charges to babysit for one hour. Explain how you determined your answer.

Name _____

Ordered Pairs

Name the point that is located by each ordered pair.

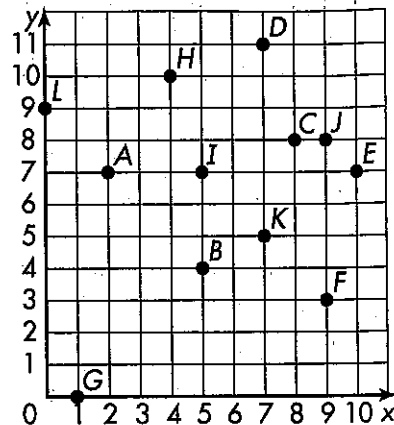
1. $(9, 3)$ _____ 2. $(1, 0)$ _____

3. $(7, 5)$ _____ 4. $(5, 7)$ _____

Write the ordered pair for each point.

5. *D* _____ 6. *C* _____

7. *E* _____ 8. *L* _____



Plot and label each point on the grid to the right.

9. $M(3, 4)$

10. $Z(6, 5)$

11. $T(0, 9)$

12. $X(4, 4)$

13. $P(3, 0)$

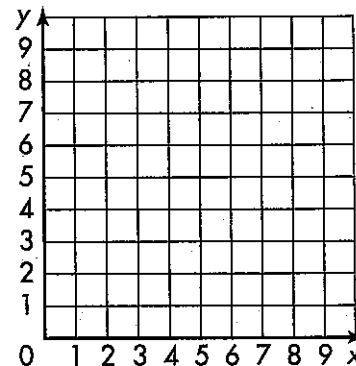
14. $A(2, 8)$

15. $H(7, 7)$

16. $B(2, 9)$

17. $J(3, 7)$

18. $L(1, 6)$



19. Which is the ordered pair for a point that is 7 units to the right of zero along the *x*-axis and 8 units above it?

A $(8, 7)$

C $(1, 7)$

B $(7, 8)$

D $(1, 8)$

20. Why are $(4, 6)$ and $(6, 4)$ not at the same point on a grid?

Name: _____ Date: _____

EXPRESSIONS AND EQUATIONS – Numerical Expressions With Exponents

Common Core Math Content 6.EE.A.1: Write and evaluate numerical expressions involving whole-number exponents.

SHARPEN YOUR SKILLS:

Evaluate.

1. 4^3

4. $5^4 - 10^2$

2. $6^2 + 3$

5. $45 - (8^3 \div 4^2)$

3. $(2 + 7)^2$

6. $(2^5 - 3^3)^4 + 23$

APPLY YOUR SKILLS:

Mrs. Booth asks her students to evaluate the expression $(8 - 3)^3 - 2^5 + 4^3$. The work of two students is shown below. Which student evaluated the expression correctly? Identify and explain the mistake(s) the other student made.

Student #1

$$\begin{aligned} (8 - 3)^3 - 2^5 + 4^3 &= 5^3 - 2^5 + 4^3 \\ &= 125 - 32 + 64 \\ &= 93 + 64 \\ &= 157 \end{aligned}$$

Student #2

$$\begin{aligned} (8 - 3)^3 - 2^5 + 4^3 &= 5^3 - 2^5 + 4^3 \\ &= 125 - 32 + 64 \\ &= 125 - 96 \\ &= 29 \end{aligned}$$



Name: _____ Date: _____

EXPRESSIONS AND EQUATIONS – Identifying Equivalent Expressions

CCSS Math Content 6.EE.A.4: Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them.)

SHARPEN YOUR SKILLS:

Select the expression from the column on the right that is equivalent to the expression in the column on the left and write its corresponding letter in the blank.

- | | |
|---------------------------|----------------|
| _____ 1. $9x - 3x + 4x$ | A. $-20x + 24$ |
| _____ 2. $-4(5x - 6)$ | B. $2x$ |
| _____ 3. $-4(5x + 6)$ | C. $-10x$ |
| _____ 4. $20x + 24x$ | D. $10x$ |
| _____ 5. $4(5x + 6)$ | E. $20x + 24$ |
| _____ 6. $8x + 3x - 9x$ | F. $44x$ |
| _____ 7. $4x - 24x + 10x$ | G. $-20x - 24$ |
| _____ 8. $4(5x - 6)$ | H. $20x - 24$ |

APPLY YOUR SKILLS:

Circle all of the expressions that are equivalent to the expression $-6(8a + 4b)$.

$-48a - 24b$

$-12(4a + 2b)$

$-4(12a + 6b)$

$24(-2a + b)$

$6(-8a - 4b)$

$-2(24a + 12b)$

$-6(8a - 4b)$

$3(-16a + 8b)$

$24(-2a - b)$

$-2a - 2b$

$-12(4a - 2b)$

Practice

Circle the letter of the best answer.

1. 12 out of 150 students at a school are exchange students. What percentage are exchange students?

A 4% C 12%
B 8% D 15%

2. The student council has \$250 to spend on a party. If they spend \$95 on decorations, what percentage of the money is spent on decorations?

F 46% H 27%
G 54% J 38%

3. On her last history test, Karija got 85% of the answers correct. In simplest form, what fraction did she get correct?

A $\frac{17}{20}$ C $\frac{13}{15}$
B $\frac{15}{20}$ D $\frac{17}{25}$

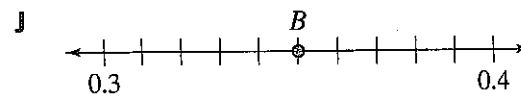
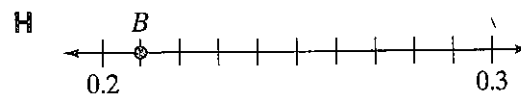
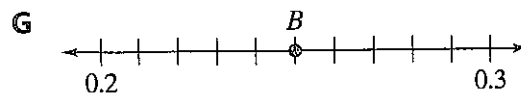
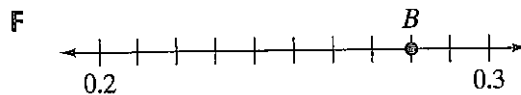
4. What is 48% written as a fraction in simplest form?

F $\frac{12}{50}$ H $\frac{12}{25}$
G $\frac{15}{24}$ J $\frac{6}{20}$

5. Coach Pinto has 15 players on her baseball team. Of these players, 6 can pitch. What percent of her players can pitch?

A 25% C 35%
B 30% D 40%

6. Which number line shows a point B that has a value that is equivalent to $\frac{7}{25}$?



7. Aaron is mixing a fruit drink that is 96% water and 4% juice. In simplest form, what fraction of the solution is the juice?

A $\frac{19}{20}$ C $\frac{1}{25}$
B $\frac{24}{25}$ D $\frac{1}{20}$

8. Of the 40 students in a club, 28 are in the sixth grade. What percent of the members are in the sixth grade?

F 54% H 86%
G 62% J 70%

9. 27% of the students in school belong to a club. What decimal represents the part of the students in a club?

A 0.027 C 0.27
B 2.7 D 27.0

Practice 3-6

The Distributive Property

Use the Distributive Property to write an equivalent expression for each of the following.

1. $6(x + 7)$

2. $8(7 + 9p)$

3. $4(3h + 5 + 6k)$

4. $(5n + 12) \times 4$

5. $6(7c + 4d + 11)$

6. $(8x + 5y) \times 3$

Factor each expression. Check your solution.

7. $27 + 33$

8. $30 + 72$

9. $45 + 55 + 20$

10. $12 + 56$

11. $56 + 120$

12. $27 + 63 + 54$

13. $4x + 18$

14. $65 + 15x$

15. $15b + 24c + 33$

16. $24h + 36$

17. $54 + 72y$

18. $36x + 16y + 28$

19. The auditorium at the School for the Arts has 7 rows of seats, and each row has 102 seats in it. Use the Distributive Property to find the number of seats in the auditorium.

20. A movie theater charges \$5.50 for a student ticket. Use the Distributive Property to find the cost for 8 students.

21. Samantha has saved \$35 from doing chores around the house. She buys 5 packs of gum and 8 packs of erasers from the school store. Use the Distributive Property to find how much Samantha spent at the school store. How much change should she receive from the cashier?

Item	Cost per pack
Pencils	\$3.00
Erasers	\$1.75
Gum	\$2.50
Taffy	\$2.00

Practice 2-2

Simplifying Algebraic Expressions

Combine like terms. Write your answer in simplest form.

1. $9j + 34j$

2. $2.3s - 1.2s$

3. $5t - 12t + 17t$

4. $6q + 14q - 8q$

5. $7t - 12t + 4t$

6. $-16w + 7w - 5w$

7. $y + \frac{5}{6}y - \frac{1}{6}y$

8. $5z - 2z - 13z$

9. $4x + 2.1x - 0.6x$

Simplify each expression. Write your answer in simplest form.

10. $4a + 7 + 2a$

11. $8(k - 9)$

12. $\frac{2}{3}(w + 3)$

13. $5(b - 6) + 9$

14. $-4 + 3(6 + k)$

15. $\frac{7}{8}j - (\frac{3}{8}j + 7)$

16. $-9 + 8(x + 6)$

17. $4(m + 6) - 3$

18. $28k + 36(7 + k)$

19. $3.09(j + 4.6)$

20. $7.9y + 8.4 - 2.04y$

21. $4.3(5.6 + c)$

22. $9.8d + 8d - 4.6d + 2.9d$

23. $18 + 27m - 29 + 36m$

24. $8(j + 12) + 4(k - 19)$

25. $4.2r + 8.1s + 1.09r + 6.32s$

Solve.

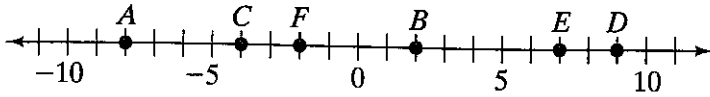
26. Tyrone bought 15.3 gal of gasoline priced at g dollars per gallon, 2 qt of oil priced at q dollars per quart, and a wiper blade priced at \$3.79. Write an expression that represents the total cost of these items.

27. Choose a number. Multiply by 2. Add 6 to the product. Divide by 2. Then subtract 3. What is the answer? Repeat this process using two different numbers. Explain.

Practice 1-1

Comparing and Ordering Integers

Name the integer represented by each point on the number line.

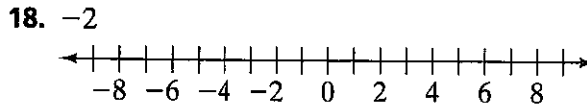
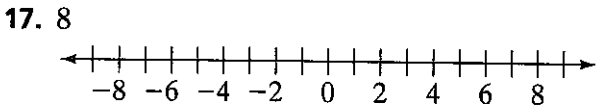
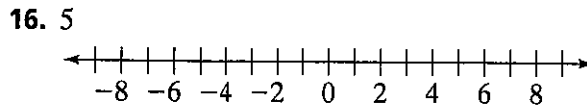
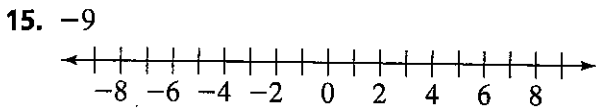


1. A _____ 2. B _____ 3. C _____ 4. D _____ 5. E _____ 6. F _____

Compare. Use $<$, $>$, or $=$.

7. $-8 \square 8$ 8. $4 \square -4$ 9. $-5 \square 1$ 10. $-8 \square 0$
 11. $-6 \square -2$ 12. $-1 \square -3$ 13. $-4 \square 0$ 14. $-3 \square 2$

Graph each integer and its opposite on the number line.



Find the opposite of each number. You may find a number line helpful.

19. 2 _____
 20. -3 _____
 21. -38 _____
 22. $(-2 + 2)$ _____
 23. -44 _____
 24. $(5 + 2)$ _____
 25. -16 _____
 26. $(7 - 3)$ _____

Write an integer to represent each situation.

27. a gain of 5 yards _____
 28. a debt of \$5 _____
 29. a temperature of 100°F _____
 30. 135 feet below sea level _____

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Practice 1-2

Adding and Subtracting Integers

Use a number line to find each sum.

1. $8 + (-4)$

2. $2 + (-3)$

3. $7 - 6$

4. $(-4) + (-8)$

5. $3 + (-2)$

6. $15 + (-8)$

Find each sum.

7. $-2 + (-3)$

8. $8 - 7 + 4$

9. $8 + (-5)$

10. $15 + (-3)$

11. $-16 + 8$

12. $7 + (-10)$

13. $-9 + (-5)$

14. $-12 + 14$

Find each difference.

15. $9 - 26$

16. $-4 - 15$

17. $21 - (-7)$

18. $27 - (-16)$

19. $-16 - (-43)$

20. $47 - 19$

21. $-156 - 98$

22. $-192 - 47$

23. $0 - (-51)$

24. $-63 - 89$

25. $-12 - (-21)$

26. $92 - (-16)$

Use $>$, $<$, or $=$ to complete each statement.

27. $-9 - (-11) \square 0$

28. $-17 + 20 \square 0$

29. $11 - (-4) \square 0$

30. $28 - 19 \square 0$

31. $52 + (-65) \square 0$

32. $-28 - (-28) \square 0$

Solve.

33. The highest and lowest temperatures ever recorded in Africa are 136°F and -11°F . The highest temperature was recorded in Libya, and the lowest temperature was recorded in Morocco. What is the difference in these temperature extremes?

34. The highest and lowest temperatures ever recorded in South America are 120°F and -27°F . Both the highest and lowest temperatures were recorded in Argentina. What is the difference in these temperature extremes?

Practice 2-4**Exploring Two-Step Equations**

Define a variable and write an algebraic expression for each phrase.

1. six times the price of gas minus 20

2. one-half the distance from Boston to New York minus 25

3. two fewer than five times the number of eggs needed in the recipe

4. 10 megabytes less than the number of megabytes in a computer, divided by 6

Solve each equation using number sense.

5. $10 + 5h = 25$

6. $8s - 8 = 64$

7. $3y + 78 = 81$

8. $2g + 4 = 12$

9. $5j + 5 = 15$

10. $3w + 8 = 20$

11. $\frac{h}{2} + 1 = 4$

12. $\frac{g}{g} + 12 = 16$

13. $2 + \frac{b}{7} = 3$

14. For a walk-a-thon a sponsor committed to give you a flat fee of \$5 plus \$2 for every mile you walk. Write an expression for the total amount you will collect from your sponsor at the end of the walk-a-thon. Then evaluate your expression for 20 miles walked.

Practice 5-2

Solving Percent Problems Using Proportions

Use a proportion to solve.

- | | |
|---------------------------------------|--|
| 1. 48 is 60% of what number?
_____ | 2. What is 175% of 85?
_____ |
| 3. What percent of 90 is 50?
_____ | 4. 76 is 80% of what number?
_____ |
| 5. What is 50% of 42.88?
_____ | 6. 96 is 160% of what number?
_____ |
| 7. What percent of 24 is 72?
_____ | 8. What is 85% of 120?
_____ |
| 9. What is 80% of 12?
_____ | 10. 56 is 75% of what number?
_____ |

Solve.

11. The sale price of a bicycle is \$120. This is 75% of the original price. Find the original price.

12. The attendance at a family reunion was 160 people. This was 125% of last year's attendance. How many people attended the reunion last year?

13. A company has 875 employees. On "Half-Price Wednesday," 64% of the employees eat lunch at the company cafeteria. How many employees eat lunch at the cafeteria on Wednesdays?

14. There are 1,295 students attending a small university. There are 714 women enrolled. What percentage of students are women?

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Name: _____ Date: _____

EXPRESSIONS AND EQUATIONS – Problem Solving With Equations

CCSS Math Content 7.EE.B.4a: Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of operations used in each approach.

SHARPEN YOUR SKILLS:

Solve the equation.

1. $\frac{1}{5}x + 7 = 16$

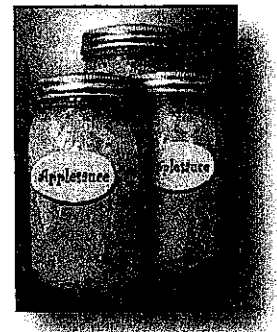
3. $-\frac{5}{9}a - \frac{2}{3} = \frac{5}{6}$

2. $2.4y - 9.5 = 4.66$

4. $3.25 + 1.58b = 12.3982$

APPLY YOUR SKILLS:

Lois is making applesauce. Each batch she makes yields $3\frac{1}{4}$ quarts of applesauce. Lois already has 1.5 quarts. She would like to have a total of $14\frac{1}{2}$ quarts before she's finished for the day. How many batches of applesauce does Lois need to make? Show your work.



Practice 2-2**Simplifying Expressions****Simplify each expression.**

1. $12 - \frac{2}{3}m + 4 - \frac{3}{4}m$

2. $a - 2 + 13 + 8a$

3. $10q - 2q + 3 - 9$

4. $8 - g - 2 + 5g$

5. $2.2k + 5 + 7.9k + 8$

6. $-4r - 2r - 6 - 4$

7. $0.2(15 - 3t) - 1.8$

8. $7x - 5(3x + 12)$

9. $\frac{1}{3}(9z - 27) + 12$

Factor each expression completely.

10. $42r - 18$

11. $100 - 50d$

12. $24x + 64$

13. $-9y - 39$

14. $60 - 24x$

15. $9w - 81$

16. $132 + 77t$

17. $16y - 56$

Use $>$, $<$, or $=$ to make each statement true.

18. $-4 + p + 2 \bullet 4p + 2 \cdot 4 - 3p$ _____

19. $2m + 2n - 5 \bullet 6 + 2(m + n) - 11$ _____

20. $3x + 4 - 4x + 2 \bullet 3(5 - x) + 2x$ _____

21. Find the perimeter of a rectangle with length $3c - 5$ and width $2c$.
Simplify your answer.

Practice

Circle the letter of the best answer.

1. Solve $a - 9 = 6$.

A $a = 3$

C $a = 15$

B $a = 12$

D $a = 54$

2. Solve $\frac{b}{4} = 8$.

F $b = 2$

H $b = 12$

G $b = 4$

J $b = 32$

3. Solve $c + 29 = 62$.

A $c = 33$

C $c = 81$

B $c = 43$

D $c = 91$

4. Solve $d - 47 = 35$.

F $d = 12$

H $d = 72$

G $d = 22$

J $d = 82$

5. Solve $6e = 114$.

A $e = 14$

C $e = 24$

B $e = 19$

D $e = 108$

6. Solve $\frac{f}{9} = 27$.

F $f = 3$

H $f = 243$

G $f = 36$

J $f = 270$

Solve the following multi-step problem. Show all your work.

7. Chi read p pages each night for 7 nights. She read a total of 238 pages. Write and solve an equation that tells how many pages Chi read each night.

Show your work.

Answer _____

Take It With You

An **equation** is a mathematical statement that two quantities are equal. An equation contains an equal sign between the quantities.

Step 1: Use **inverse operations** to solve equations. Inverse operations undo each other. Addition and subtraction are inverse operations. Multiplication and division are also inverse operations.

Step 2: Check your answer by replacing the variable in the original equation with your solution to see if the equation is true.

