

WELCOME TO SUMMER AND.....

7th GRADE SUMMER MATH!!!

The Dodge math teachers have put together a math packet for you to work on this summer. We really want you to find success in 7th grade math next year. You need to keep current on your skills so that we “can hit the ground running” on August 4th. This is a graded assignment and will be due Monday, August 8th.

IT IS NOT OPTIONAL!

It is also NOT for extra credit but your first 7th grade math assignment.

The best way to use this packet is to do a little bit EVERY DAY. Please do not sit and do all of the work on just one weekend. If you do 10 problems a day throughout the summer your math skills will continue to improve. Have someone at home check your answers to make sure you are working the problems correctly.

Show all work. Only use calculators to check your answers. The work must be neat and legible. Use graph or lined paper to show extra work.

Based on your efforts Ms. Staab may choose to give you extra points.

Looking forward to seeing you in August!

STUDENT NAME X _____

PARENT SIGNATURE X _____

Fractions: Comparing and Ordering

★ Part I: Write $<$, $>$, or $=$ for each \bigcirc .

$$\frac{3}{4} \bigcirc \frac{5}{6}$$

To compare two fractions, find their cross products and compare.

$$18 \frac{3}{4} \bigcirc \frac{5}{6} 20$$

$$18 < 20, \text{ so } \frac{3}{4} \bigcirc \frac{5}{6}$$

1. $\frac{7}{10} \bigcirc \frac{4}{5}$

2. $\frac{2}{10} \bigcirc \frac{1}{6}$

3. $\frac{7}{9} \bigcirc \frac{3}{5}$

4. $\frac{14}{25} \bigcirc \frac{3}{4}$

5. $\frac{8}{24} \bigcirc \frac{20}{60}$

6. $\frac{3}{9} \bigcirc \frac{2}{8}$

7. $\frac{5}{12} \bigcirc \frac{4}{9}$

8. $\frac{1}{3} \bigcirc \frac{3}{5}$

9. $\frac{18}{24} \bigcirc \frac{10}{18}$

10. $\frac{4}{6} \bigcirc \frac{5}{9}$

11. $\frac{1}{3} \bigcirc \frac{2}{4}$

12. $\frac{2}{3} \bigcirc \frac{8}{12}$

13. $\frac{6}{15} \bigcirc \frac{4}{10}$

14. $\frac{7}{12} \bigcirc \frac{12}{42}$

15. $\frac{5}{14} \bigcirc \frac{2}{6}$

★ Part II: Order from least to greatest.

TIP: Try changing the fractions to decimals; then compare them.

16. $\frac{2}{9}, \frac{3}{5}, \frac{3}{4}, \frac{2}{11}$

17. $\frac{2}{3}, \frac{2}{7}, \frac{2}{5}, \frac{2}{9}$

18. $\frac{2}{5}, \frac{1}{4}, \frac{1}{2}, \frac{3}{7}$

19. $\frac{5}{8}, \frac{8}{9}, \frac{13}{18}, \frac{2}{3}$

Fractions: Improper Fractions & Mixed Numbers

★ Part I: Change each improper fraction to a mixed number in simplest form or a whole number.

$$\frac{18}{4}$$

$$\begin{array}{r} 4 \overline{)18} \\ \underline{-16} \\ 2 \end{array} \quad \begin{array}{l} \downarrow \\ 4 \end{array} \quad \begin{array}{l} \rightarrow \\ 4 \end{array} \quad = 4 \frac{2}{4} = 4 \frac{1}{2}$$

1. Divide the numerator by the denominator.
2. If there is a remainder, put it in fraction form over the divisor.
3. Reduce fraction to lowest terms.

1. $\frac{9}{7}$

2. $\frac{7}{4}$

3. $\frac{12}{5}$

4. $\frac{8}{8}$

5. $\frac{20}{8}$

6. $\frac{17}{5}$

7. $\frac{6}{2}$

8. $\frac{21}{9}$

9. $\frac{26}{6}$

10. $\frac{23}{7}$

11. $\frac{4}{3}$

12. $\frac{21}{4}$

13. $\frac{22}{5}$

14. $\frac{19}{3}$

15. $\frac{6}{5}$

★ Part II: Change each mixed number or whole number to an improper fraction.

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

$$5 \times 3 + 1 = \frac{16}{3}$$

1. Multiply the whole number by the denominator.
2. Add the numerator.
3. Place that number over the denominator.

16. $3 \frac{4}{5}$

17. $2 \frac{2}{3}$

18. $2 \frac{3}{8}$

19. $5 \frac{3}{5}$

20. $3 \frac{7}{8}$

21. $6 \frac{3}{8}$

22. $7 \frac{2}{3}$

23. $9 \frac{2}{5}$

24. $6 \frac{3}{5}$

25. $8 \frac{4}{7}$

26. $2 \frac{7}{10}$

27. $3 \frac{5}{12}$

28. $6 \frac{2}{7}$

29. $3 \frac{4}{9}$

30. $3 \frac{6}{7}$

* Fractions: Adding and Subtracting Mixed Numbers

Find each sum or difference. Reduce.

$$7\frac{1}{6} = 7\frac{2}{12} = 6\frac{14}{12}$$

$$-3\frac{1}{4} = 3\frac{3}{12} = 3\frac{3}{12}$$

$$3\frac{11}{12}$$

1. Find the lowest common denominator (LCD).
2. Write the equivalent fractions using the LCD.
3. Rename if necessary.
4. Add or subtract the whole numbers and fractions.
Reduce if necessary.

1. $3\frac{6}{7}$
 $+ 4\frac{1}{8}$

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

3. $8\frac{1}{2}$
 $+ 2\frac{4}{5}$

4. $5\frac{5}{6}$
 $- 4\frac{9}{10}$

5. $2\frac{1}{2}$
 $+ 4\frac{11}{16}$

6. $7\frac{1}{2}$
 $- 1\frac{7}{8}$

7. $8\frac{3}{16}$
 $+ 2\frac{5}{8}$

8. $8\frac{3}{8}$
 $- 7\frac{3}{4}$

9. $4\frac{1}{6}$
 $+ 8\frac{1}{4}$

10. $6\frac{1}{4}$
 $- 3\frac{7}{10}$

11. $3\frac{2}{3}$
 $+ 2\frac{1}{6}$

12. $4\frac{2}{9}$
 $- 1\frac{1}{6}$

13. $\frac{3}{4} + 5\frac{1}{2} + 2\frac{5}{8} =$

14. $12 - 7\frac{7}{10} =$

15. $18\frac{1}{2} + 5\frac{3}{4} + 1\frac{9}{10} =$

16. $25 - (16\frac{1}{5} + 2\frac{4}{5}) =$

17. $7\frac{3}{5} - 2\frac{9}{10} =$

18. $3\frac{3}{10} - 2\frac{2}{5} =$

* Fractions: Dividing Fractions and Mixed Numbers

Find each quotient. Reduce.

$$3\frac{7}{10} \div 2\frac{1}{2} =$$

$$\frac{37}{10} \div \frac{5}{2} =$$

$$\frac{37}{10} \times \frac{2}{5} = \frac{74}{50} = 1\frac{12}{25}$$

1. Write the mixed numbers (or whole numbers) as improper fractions.
2. To divide fractions, flip the second one to change it into its reciprocal, and then multiply.
3. Reduce.

TIP: Remember that a whole number can be written as a fraction by placing it over one. $4 = \frac{4}{1}$

$$1. \frac{1}{3} \div \frac{1}{6} =$$

$$2. \frac{3}{4} \div \frac{1}{2} =$$

$$3. \frac{5}{8} \div \frac{1}{16} =$$

$$4. 2 \div 1\frac{1}{4} =$$

$$5. 5 \div \frac{5}{8} =$$

$$6. \frac{5}{12} \div \frac{3}{16} =$$

$$7. 6\frac{1}{4} \div 5 =$$

$$8. 1\frac{1}{3} \div 2\frac{5}{6} =$$

$$9. 2\frac{1}{2} \div 3\frac{3}{4} =$$

$$10. 6\frac{2}{3} \div 3\frac{1}{9} =$$

$$11. 11\frac{3}{4} \div 5\frac{3}{4} =$$

$$12. \frac{11}{16} \div \frac{3}{16} =$$

* Algebra: Solving Addition & Subtraction Equations

Solve and check each equation.

$$x - 15 = 29$$

$$x - 15 + 15 = 29 + 15$$

$$x = 44$$

$$\text{Check: } 44 - 15 = 29$$

$$29 = 29 \checkmark$$

1. Look at what has been done to the variable.
2. Undo it using the inverse (opposite) operation on both sides of the equation.
3. To check, replace the variable with your solution.

* Circle final answer.

$$1. d + 32 = 70$$

$$2. x - 36 = 12$$

$$3. t - 31 = 30$$

4. $2.5 + r = 4$

5. $g - 3.5 = 1.25$

6. $n + 240 = 300$

7. $5.6 + x = 6.3$

8. $n - 305 = 225$

9. $708 = n + 300$

10. $7.09 = 3 + y$

11. $b + 12.3 = 14$

12. $s - 3.2 = 6$

* Ratio & Proportion: Solving Proportions

Solve each proportion.

$$\frac{5n}{6} = \frac{n}{24}$$

$$\begin{aligned} 6 \cdot n &= 5 \cdot 24 \\ n &= 120 \div 6 \\ n &= 20 \end{aligned}$$

A proportion is two equal ratios. To solve:

1. Find the cross products.
2. Division undoes multiplication to solve for n.

* Circle final answer.

1. $\frac{18}{27} = \frac{n}{3}$

2. $\frac{2}{6} = \frac{5}{n}$

3. $\frac{1}{2} = \frac{n}{30}$

4. $\frac{15}{24} = \frac{n}{36}$

5. $\frac{6}{5} = \frac{n}{4}$

6. $\frac{2.5}{4} = \frac{10}{x}$

7. $\frac{3}{4} = \frac{9}{n}$

8. $\frac{8}{12} = \frac{n}{3}$

9. $\frac{15}{9} = \frac{10}{n}$

10. $\frac{5}{n} = \frac{6}{3}$

11. $\frac{18}{42} = \frac{n}{7}$

12. $\frac{2.6}{13} = \frac{8}{h}$

13. $\frac{5}{9} = \frac{n}{5.4}$

14. $\frac{21}{m} = \frac{10}{20}$

15. $\frac{6}{x} = \frac{3}{10}$

16. $\frac{7}{8} = \frac{49}{x}$

17. $\frac{7}{5} = \frac{n}{60}$

18. $\frac{p}{20} = \frac{120}{150}$

19. $\frac{15}{w} = \frac{60}{4}$

20. $\frac{40}{8} = \frac{150}{c}$

21. $\frac{4}{3} = \frac{n}{45}$

22. $\frac{7}{8} = \frac{n}{72}$

23. $\frac{n}{72} = \frac{2}{4}$

24. $\frac{50}{60} = \frac{n}{3}$

* Percents: Percents & Fractions

Part I: Express each fraction as a percent. Round to the nearest whole percent.

$$\frac{12}{20}$$
$$12 \div 20 = 0.6$$
$$60\%$$

1. Change the fraction to a decimal.
(numerator \div denominator)
2. Change the decimal to a percent. (Move the decimal two places to the right. Add a zero if necessary, and do not forget the percent sign.)

TIP: A percent compares a quantity to 100. If the fraction is out of 100, then your numerator is the percent. $\frac{43}{100} = 43\%$

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

2. $\frac{24}{25}$

3. $\frac{18}{25}$

4. $\frac{2}{5}$

5. $\frac{3}{10}$

6. $\frac{11}{20}$

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

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

9. $\frac{40}{125}$

10. $\frac{5}{6}$

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

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

* Part II: Express each percent as a fraction in simplest form.

$$55\% = \frac{55}{100} = \frac{11}{20}$$

1. Drop the percent sign, and place the number over 100.
2. Reduce to lowest terms.

13. 15%

14. 25%

15. 72%

16. 10%

17. 70%

18. 50%

19. 34%

20. 2%

21. 42%

22. $3\frac{1}{3}\%$

23. 1%

24. 23%

* Percent: Percent of a Number

Use a proportion to solve each problem. Round answers to the nearest tenth.

(A)

What number is 25% of 520?

$$\begin{aligned}\frac{x}{520} &= \frac{25}{100} \\ 100x &= 13,000 \\ x &= 130\end{aligned}$$

Answer: 130 is 25% of 520.

Percent Proportion

$$\frac{\text{Part}}{\text{Whole}} = \frac{\%}{100}$$

1. Identify the part, whole, or percent.
2. Plug the numbers into the proportion, and solve for the missing piece (part, whole, or percent).

OR (B)

$$\begin{aligned}\% \text{ of Total} &= \text{Part} \\ (25)(520) &= x\end{aligned}$$

Try it!

37.5%

1. 25 is what percent of 40?
 $25 = x \cdot 40$
2. Find $37\frac{1}{2}\%$ of 64.
3. 50% of 128 is what number?
4. What number is 60% of 72?
5. 2 is 40% of what number?
6. Find 80% of $90\frac{1}{2}$.
7. 107 is what percent of 214?
8. What number is 25% of 36?

Integers: Meaning of Integers

Write an integer for each exercise.

An integer is the set of whole numbers and their opposites.

If -15 represents a withdrawal of \$15, write an integer for a withdrawal of \$42.

Answer: -42

TIP: A plus sign is not needed to write a positive integer; however, a negative sign is required for a negative integer.

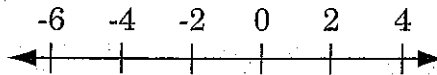
1. a loss of 12 pounds
2. 6 inches taller
3. 34 degrees below zero
4. a loss of 11 yards
5. a profit of \$50
6. a gain of 2 pounds

7. the opposite of 15
8. the opposite of -20
9. 4 strokes over par
10. 3 inches shorter
11. an altitude of 2,000 feet
12. 100 feet below sea level
13. 7 units to the left of zero on a number line
14. 16 units to the right of zero on a number line
15. 3 strokes under par
16. a gain of 6 points
17. a loss of \$210
18. an increase of 12 degrees
19. a deposit of \$100
20. a gain of 25 yards



Think About It!

21. Graph the set of numbers on the number line $\{-5, -3, 0, 2\}$.



★ Integers: Absolute Value

Find each absolute value.

The absolute value of a number is its distance from zero. The following symbol is used when asked to find the absolute value: $| |$ (two straight lines surrounding the number).

$$| -10 | = 10$$

$$| 28 - 11 | = 17$$

-10 is 10 places from zero, so its absolute value is 10.

Subtract the numbers first; then find the absolute value.

1. $| 4 |$

2. $| -5 |$

3. $| 11 |$

4. $| -3 |$

5. $| 0 |$

6. $| 6 |$

7. $| -8 |$

8. $| 12 |$

9. $| 23 |$

10. $| -9 |$

11. $| -45 |$

12. $| 33 |$

13. $|-28|$

14. $|-51|$

15. $|61|$

16. $|-73|$

17. $|23 - 5|$

18. $|12 + 7|$

19. $|-14|$

20. $|38|$

21. $|12| - |-8|$

22. $|0 + 6|$

23. $|-15|$

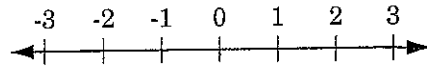
24. $|65 + 59|$

★ Integers: Comparing and Ordering Absolute Value

Part I: Compare. Use $<$, $>$, or $=$ for each \bigcirc .

When comparing integers, the integer that is farther to the right on the number line has the *greater value*.

$$-1 \bigcirc -3$$



-1 is farther to the right, so $-1 > -3$.

1. $-5 \bigcirc 0$

2. $-8 \bigcirc -5$

3. $2 \bigcirc -2$

4. $10 \bigcirc -70$

5. $40 \bigcirc -40$

6. $-35 \bigcirc -35$

7. $-10 \bigcirc -24$

8. $68 \bigcirc -50$

9. $6 \bigcirc -16$

10. $20 \bigcirc -30$

11. $-65 \bigcirc -45$

12. $-32 \bigcirc -12$

Part II: Order from greatest to least.

13. $-1, -5, 1, 0, -8, -4$

14. $0, -7, 3, 7, -2$

15. $14, -5, 1, -1, 0, -9$

16. $-20, -60, 0, 110, 60, -140$

17. $20, -20, 10, -10, 50, -30$

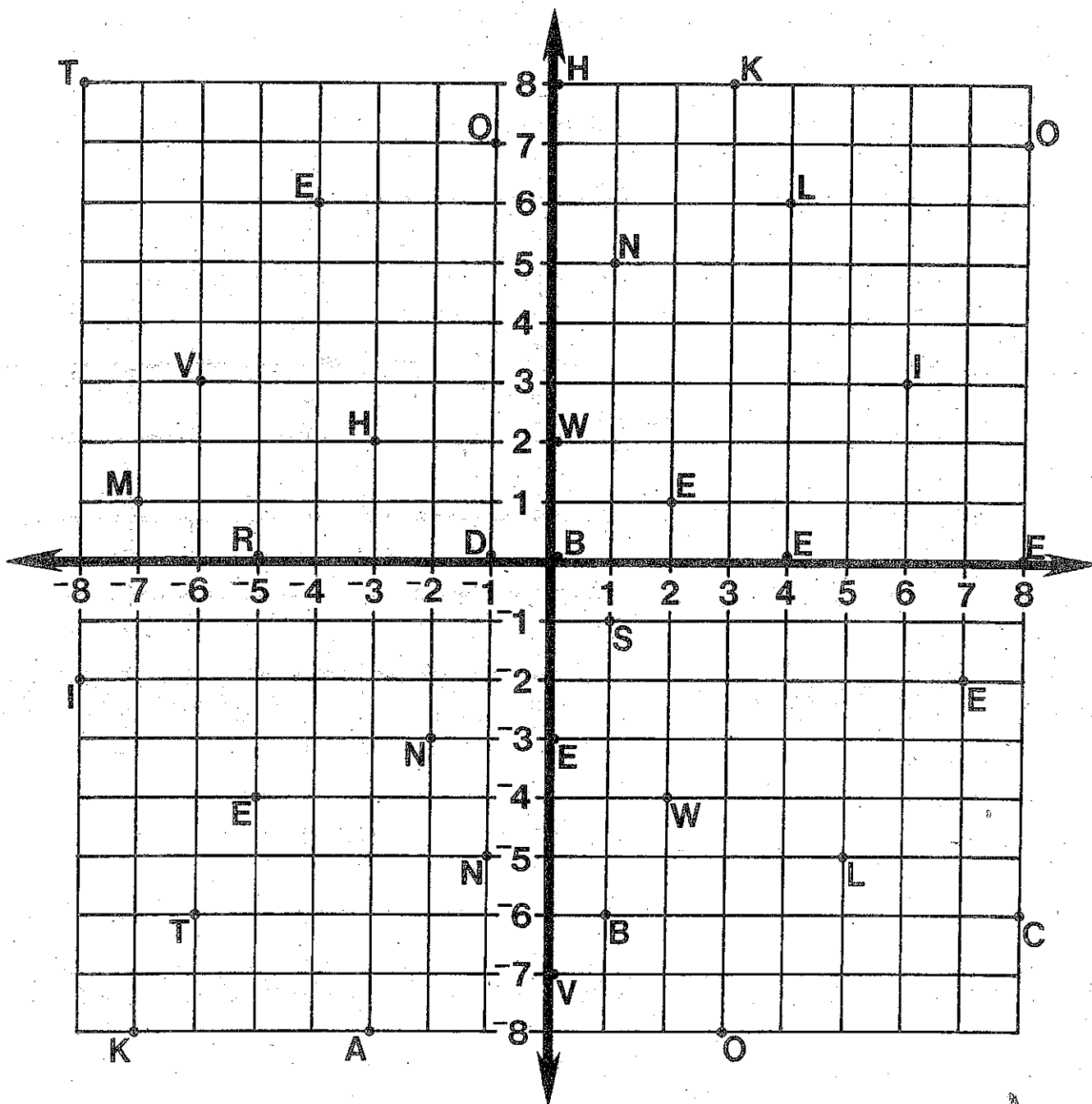
18. $60, -30, -10, 0, 40, -40$

19. $-75, 85, 90, -25, 50$

20. $-18, -20, -5, -10, -17$

What Did One Ear Say To The Other?

Each pair of numbers at the bottom of the page stands for a point on the coordinates below. Above each pair of numbers, write the letter that appears at that point.



(6,3) (1,5) (-4,6) (-6,3) (4,0) (-5,0) (-7,-8) (-1,-5) (7,-2) (2,-4) (0,2) (0,-3)

(0,0) (8,7) (-6,-6) (-3,2) (5,-5) (-8,-2) (0,-7) (-5,-4) (-1,0) (3,-8) (-2,-3)

(-8,8) (0,8) (8,0) (1,-1) (-3,-8) (-7,1) (2,1) (1,-6) (4,6) (-1,7) (8,-6) (3,8)