

NAME: _____

ANSWER KEY

Revision questions:

① Why is the answer key answer different from yours?

DATE: _____

② What do you need to remember for next time?

Rational Numbers (Part 2) Performance Task

1. What is the definition of a rational number? Include an example of a rational number.

A number that can be written as a ratio of two integers. Ex: $\frac{1}{2}$, $-\frac{5}{4}$, 5

2. Which of the following is NOT a rational number?

a. $\frac{-7}{4}$

b. $\sqrt{4}$

c. 5

(d) π π cannot be written as a ratio of two numbers

3. Which of the following is NOT a rational number?

a. $4\frac{5}{8}$

b. -87

(c) $\sqrt{2}$ $\sqrt{2}$ cannot be written as a ratio of two numbers

d. $\frac{-1}{3}$

4. What number do I need to add to -5 to get the sum of 0?

$$-5 + 5 = 0$$

$$\boxed{+5}$$

A number and it's opposite add to zero. The opposite of -5 is +5.

5. What number do I need to add to $\frac{3}{4}$ to get a sum of 0?

$$\frac{3}{4} + \frac{-3}{4} = 0$$

$$\boxed{-\frac{3}{4}}$$

the opposite of $\frac{+3}{4}$ is $\frac{-3}{4}$

6. What is the value of x to make the statement true? $(-7 + 5) + x = 0$

$$(-7 + 5) + x = 0$$

$$-2 + x = 0$$

$$-2 + 2 = 0$$

$$\boxed{+2}$$

the opposite of

-2 is $+2$

7. What is the value of x to make this statement true? $(\frac{-2}{3} + \frac{3}{4}) + x = 0$

$$(\frac{-2}{3} + \frac{3}{4}) + x = 0$$

$$(\frac{4}{4} \cdot \frac{-2}{3} + \frac{3}{4} \cdot \frac{3}{3}) + x = 0$$

$$(\frac{-8}{12} + \frac{9}{12}) + x = 0$$

$$\frac{1}{12} + x = 0$$

$$\frac{1}{12} + \frac{-1}{12} = 0$$

$$\boxed{\frac{-1}{12}}$$

the opposite of

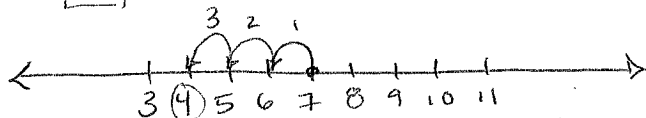
$\frac{1}{12}$ is $\frac{-1}{12}$

8. Solve the following, show how you solved using a number line:

a. $7 - 3 = \boxed{4}$

subtract

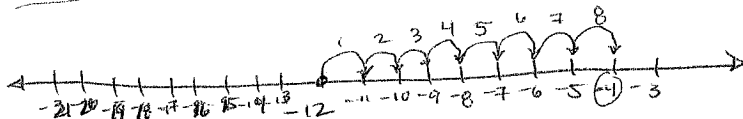
(positive number goes same direction)



b. $-12 + 8 = \boxed{-4}$

addition

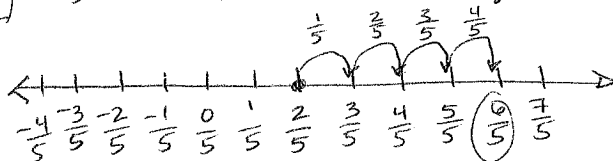
(positive number goes same direction)



c. $\frac{2}{5} + \frac{4}{5} = \boxed{\frac{6}{5}} = 1\frac{1}{5}$

addition

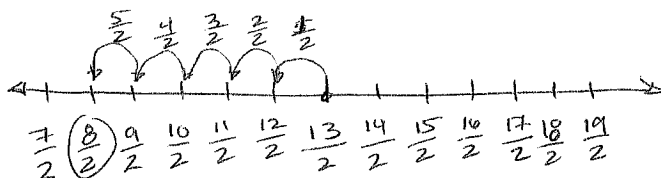
(positive number goes in same direction)



d. $\frac{13}{2} - \frac{5}{2} = \boxed{\frac{8}{2}} = 4$

subtraction

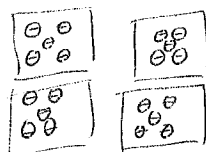
(positive number goes in same direction)



9. Solve the following:

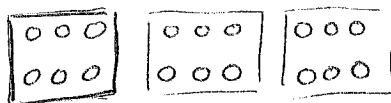
a. $4 \times (-5) = -20$

positive times negative is negative



b. $-18 \div (-3) = +6$

negative times negative is positive



c. $\frac{4}{7} \times \frac{2}{3} = \frac{-8}{21}$

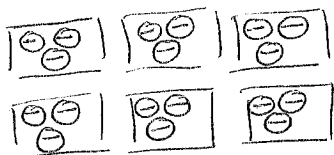
d. $\frac{5}{9} \div \frac{3}{2} = \frac{5}{9} \times \frac{2}{3} = \frac{10}{27}$

Keep 1st term, Elip 2nd term, Change = to x

10. Use the following to show whether multiplying a positive number by a negative number is equal to a positive or a negative number:

$6 \times (-3) = -18$

Six groups of -3



total of -18

Algebraically:

$6 \times (-3 + x) = 0$
opposite of -3 is +3

$6 \times (-3 + 3) = 0$

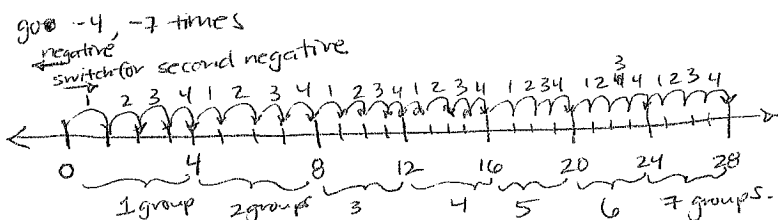
$6 \times (-3) + 6 \times 3 = 0$

$6 \times (-3) + 18 = 0$
opposite of +18 is -18

$6 \times (-3) = -18$

11. Use the following to show whether multiplying a negative number by a negative number is equal to a positive or negative number:

$-7 \times (-4) = +28$



$0 - (-4)$

subtract (negative switch direction)

Algebraically:

$-7 \times (-4 + x) = 0$
opposite of -4 is +4

$-7 \times (-4 + 4) = 0$

$-7 \times (-4) + -7 \times (4) = 0$

$-7 \times (-4) + -28 = 0$
-28 (solved like question 10)

$-7 \times (-4) + -28 = 0$
opposite of -28 is +28

$-7 \times (-4) = +28$

12. Jordan brought a bag of candy to school. There were 100 pieces. How many pieces would each student in class get? (There are 25 students in class.)

$$\frac{100 \text{ pieces}}{25 \text{ students}} = 4 \text{ pieces/student}$$

$$25 \overline{)100} \\ \underline{-100} \\ 0$$

- a. If Joshua decided to bring in 5 candy bars instead of a bag of candy, how much would each student get?

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

$$\frac{5 \text{ candy bars}}{25 \text{ students}} = \frac{1}{5} \text{ candy bar/student}$$

- b. If Joshua brought in 6 candy bars with coconut in them, but 3 students don't like coconut. How much will each remaining student get?

$$\begin{array}{r} 25 \text{ students} \\ - 3 \text{ students} \\ \hline 22 \text{ students} \end{array}$$

$$\frac{6 \text{ candy bars}}{22 \text{ students}} = \frac{3}{11} \text{ candy bar/student}$$

13. Valerie wanted to bake cookies for her class. The recipe calls for $2\frac{1}{4}$ cups of flour and makes 18 cookies.

- a. She decided to double the recipe because she wanted enough cookies for everyone in her class to get one. How much flour does she need?

$$2\frac{1}{4} \text{ cups} + 2\frac{1}{4} \text{ cups}$$

$$\frac{9}{4} + \frac{9}{4} = \frac{9+9}{4} = \frac{18}{4} \stackrel{\div 2}{=} \frac{9}{2} = 4\frac{1}{2} \text{ cups}$$

- b. If there are 24 students in her class, and she does not want any extra cookies, how does she need to adjust the recipe?

$$\frac{24}{18} = \frac{4}{3} \quad \text{multiply the original recipe by } \frac{4}{3}$$

- c. In this case, how much flour would she need?

$$2\frac{1}{4} \text{ cups} \times \frac{4}{3}$$

$$\frac{9}{4} \times \frac{4}{3} = \frac{36}{12} = 3 \text{ cups}$$

14. Every month, Ms. Vazquez pays her car loan through automatic payments (withdrawals) from her savings account. She pays the same amount on her car loan each month. At the end of the year, her savings account balance changed by $-\$2,931$ from payments made on her car loan. (Remember, there are 12 months in a year.)

a. What is the change in Ms. Vazquez's' savings account balance each month due to her car payment?

$$-\frac{\$2,931}{12 \text{ months}} = \boxed{-\$244.25}$$

negative \div positive = negative

$$\begin{array}{r} 244.25 \\ 12 \overline{) 2,931.0} \\ \underline{24} \\ 53 \\ \underline{-48} \\ 45 \\ \underline{-48} \\ 30 \\ \underline{-24} \\ 60 \\ \underline{-60} \\ 0 \end{array}$$

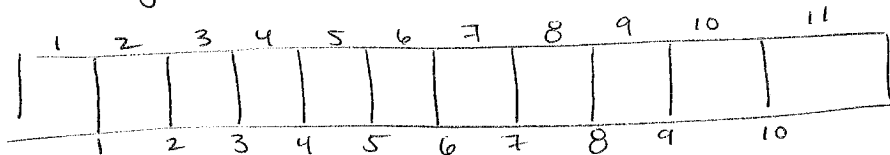
b. Describe the total change to Ms. Vazquez's savings account balance after making six monthly payments on her car loan.

$$-\$2,931 \div 2 = \boxed{-\$1,465.50}$$

$$-\$244.25 \times 6 \text{ months} = \boxed{-\$1,465.50}$$

15. Michael's father bought him a 16-foot board to cut into shelves for his bedroom. Michael plans to cut the board into 11 equal size lengths for his shelves.

a. How many cuts will Michael make to the board? (Draw a diagram to determine this.)
11 equal size lengths



$\boxed{10 \text{ cuts}}$

b. The saw blade that Michael will use to cut the board will change the length of the board by -0.125 inches for each cut. How will this affect the total length of the board?

$$\begin{array}{r} -0.125 \text{ inches/cut} \\ \times 10 \text{ cuts} \\ \hline -1.250 \end{array}$$

$\boxed{-1.250 \text{ inches}}$

c. After making his cuts, what will the exact length of each shelf be?

$$\begin{array}{r} 16 \text{ feet} \\ \times 12 \text{ inches/feet} \\ \hline 32 \\ 160 \\ \hline 192 \text{ inches} \end{array}$$

Change # feet of board to inches

$$\begin{array}{r} 192.00 \text{ inches} \\ - 1.25 \text{ inches} \\ \hline 190.75 \text{ inches} \end{array}$$

total length after cuts

length of each board

$$\begin{array}{r} 17.3409 \\ 11 \overline{) 190.7500} \\ \underline{-11} \\ 80 \\ \underline{-77} \\ 37 \\ \underline{-33} \\ 45 \\ \underline{-44} \\ 100 \\ \underline{-99} \\ 1 \end{array}$$

$\boxed{17.3409 \text{ inches per board}}$