

Key

Name _____

Your score 29 Percent _____

Unit 1 Rational & Irrational Numbers Pre-Test
Math 7 and Math 7+

Possible points 29

Show work on ALL problems

Correct all your work please.
Fill out scales please.

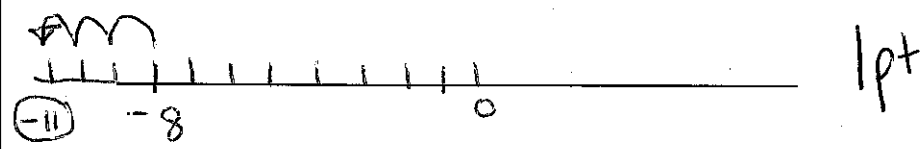
Standard 7.NS.1 and 7.NS.2

Apply and extend previous understandings of addition and subtraction to add, subtract, multiply, and divide rational numbers

1) Use a number line to illustrate the following (use $p = -8$ and $q = 3$):

$p - q$ $-8 - 3 = -11$ 1pt

$p + (-q)$ $-8 + -3 = -11$ 1pt



2) Is this expression true: $p - q = p + (-q)$? Explain by substituting values in for p and q .

$-8 - 3 \stackrel{?}{=} -8 + -3$ 1pt
 $\boxed{-11} = \boxed{-11}$
yes

3) Which of the following statements below describes $p + (-q) = p - q$?

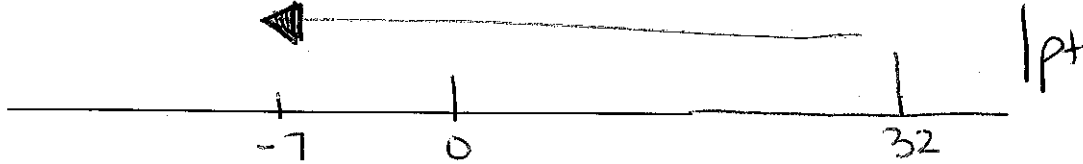
- a) Adding a negative number is the same as subtracting a positive number
 - b) Subtracting a negative number is the same as adding a positive number
 - c) Adding a negative number is the same as adding a positive number
 - d) Subtracting a positive number is the same as subtracting a negative number
- 1pt

5pts total

- 4) Dribble Dee McGee has \$32 and he needs to pay his friend, Slapstick Sammy Magoo \$39. How much will Dribble Dee McGee have after paying Slapstick Sammy Magoo? Show all work. Express your answer as an integer and in real-life terms.

$$32 - 39 = -7 \quad 1pt$$

Lastly, express the process on a number line:



- 5) Describe a real-life situation where opposite quantities combine to make 0. When you are finished describing your example, use math to show how both quantities equal 0.

I owe a friend \$10.00.

I pay my friend \$10.00

I owe nothing.

1pt

Must use both

$$-10 + 10 = 0 \quad 1pt$$

Standard 7.EE.4

Use variables to represent quantities in a real world or mathematical problem

- 6) The sum of three consecutive even numbers is 48. What are the 3 numbers?

let 1st # = $X \rightarrow 14$

2nd # = $X + 2 \rightarrow 16$

3rd # = $X + 4 \rightarrow 18$

$$\begin{array}{r} 3X + 6 = 48 \\ \underline{-6} \quad \underline{-6} \end{array}$$

$$\frac{3X}{3} = \frac{42}{3}$$

$X = 14$ ← smallest #

Final answer

Standard 7.NS.3

Solve real-world and mathematical problems involving the four operations with rational numbers

- 7) Captain Super Awesome Amazing Man is calling his girlfriend, Gabby Complains-a-Lot. He has to call her a lot. He notices his cell phone bill is automatically deducting \$32 from his bank account every month. How much will the deductions total for the year?

$$\ominus 32 \times 12$$

His deductions equal

1pt

$\ominus 384$

$\hookrightarrow \$ 384$

bpts total

8) A submarine is floating on the surface of Lake Erie. It descends 75 feet, drops 7 more feet, then rises 12 feet. Express your answer as an integer and in real-life terms.

$$\ominus 75 \ominus 7 \oplus 12 =$$

$$-82 + 12$$

$$\boxed{-70}$$

1pt
need both!
The submarine is @ 70 feet below surface

Standard 7.EE.1

Apply properties of operations as strategies to add, factor, and expand linear expressions with rational coefficients

9) Write an equivalent expression for $3(x+5) - 2$. Remember to combine like terms!

$$3x + 15 - 2$$

$$\boxed{3x + 13}$$

Final answer

1pt

10) Mr. Herman says the two expressions $2(3a - 2) + 4a$ and $10a - 2$ are equivalent. Is he correct? Explain by using the distributive property and combining like terms in your final answer!

$$6a - 4 + 4a$$

$$10a - 4$$

?

$$10a - 2$$

are they identical?

No, they are not b/c $-4 \neq -2$

1pt

11) Factor the following expression. Remember to use the slide technique, and your answer needs to be in the form of $a(b+c)$ or $a(b-c)$ in order to receive full credit!

$$\begin{array}{r} 3 \overline{) 3a - 12} \\ 1a - 4 \end{array}$$

or

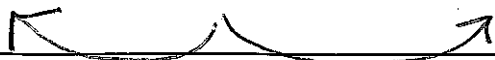
$$\begin{array}{r} -3 \overline{) 3a - 12} \\ -1a + 4 \end{array}$$

1pt

$$3(1a - 4)$$

or

$$-3(-1a + 4)$$



4pts to be

12) Which of the following fractions is equivalent to $-\frac{4}{5}$? Explain your reasoning.

a) $\frac{4}{-5}$

b) $\frac{-16}{20}$

~~c) $\frac{-4}{-5}$~~

1pt (which one?)

Explanation:

1pt →

a) b/c in a fraction a negative can be in the numerator, in the denominator or in the middle.

b) b/c $-4 \cdot 4 = \boxed{-16}$ and $5 \cdot 4 = \boxed{20}$ multiplying top/bottom by the same factor yields the same result.

13) Using long division, express the following fractions as decimals:

$\frac{5}{6}$

1pt

$$\begin{array}{r} 0.8\bar{3} \\ 6 \overline{) 50} \\ \underline{48} \\ 20 \\ \underline{18} \\ 2 \end{array}$$

$\frac{17}{32}$

1pt

$$\begin{array}{r} 0.53125 \\ 32 \overline{) 170} \\ \underline{16} \\ 100 \\ \underline{96} \\ 40 \\ \underline{32} \\ 80 \\ \underline{64} \\ 160 \\ \underline{160} \\ 0 \end{array}$$

factor yields the same result.

1pt

14) Which fraction will terminate? 2nd

1pt

15) Which fraction will repeat? 1st

1pt

16) Which of the following statements is true about a fraction whose decimal equivalent will terminate?

- a) Once the fraction is simplified, the numerator can be broken into factors of 2's and/or 3's
- b) Once the fraction is simplified, the numerator can be broken into factors of 3's and/or 5's
- c) Once the fraction is simplified, the denominator can be broken into factors of 3's and/or 5's
- d) Once the fraction is simplified, the denominator can be broken into factors of 2's and/or 5's**

7pts total

17) Rational numbers can be categorized in three forms. List the **three forms** of rational numbers & provide examples of each:

- terminating ^{1pt} Example: 0.5 ^{1pt}
- repeating ^{1pt} Example: 0. $\overline{3}$ ^{1pt}
- fractions ^{1pt} Example: $\frac{1}{4}$ ^{1pt}

8. NS. A 1

All rational numbers have a decimal expansion; converting a decimal expansion that repeats into a rational number

18) Simplify. Convert to a proper fraction or a mixed number in simplest form. Show all work!

$$3.\overline{723} = \frac{723 - 7}{990} = \frac{716}{990}$$

^{1pt}
you can leave your answer just like this

- Look only at the part after the decimal.
- subtract the part that's not under the bar
- denominator: anything under the bar - 9
" " not under the bar - 0
- \emptyset cannot go ^{1pt}

7pts total