Today's Plan:

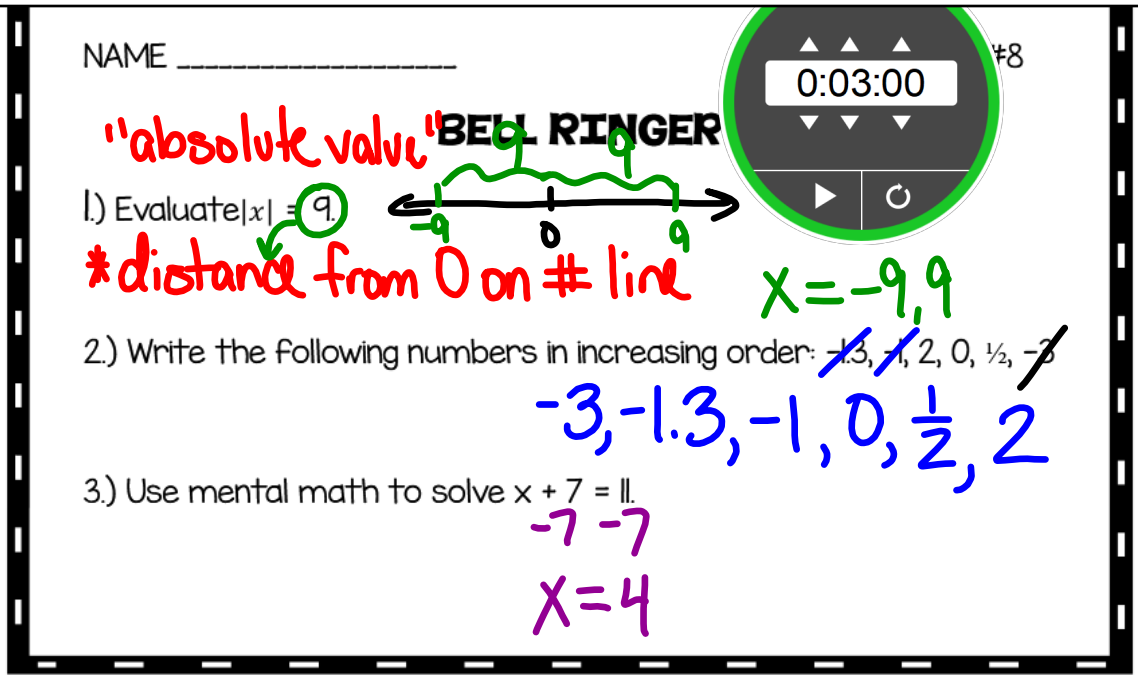
Learning Target (standard): I will perform operations on rational numbers and simplify the results.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.



Objective: Identify and use the number properties to solve for n.

1 $n \cdot 0 = 8$ $n=8$ $8+0=8$ identity (addition)	2 $3n = 3$ $n=1$ $3 \cdot 1 = 3$ identity (multiplication)	3 $4 \cdot n = 3 \cdot 4$ $4+3=3+4$ Commutative (addition)
4 $5n = 2(5)$ $n=2$ $5 \cdot 2 = 2 \cdot 5$ Commutative (multiplication)	5 $4n = 1$	6 $-3 \cdot 3 = n$
7 $n \cdot (3 \cdot 4) = (2 \cdot 3) \cdot 4$ $2+(3+4)=(2+3)+4$ Associative (addition)	8 $6 = n$	9 $\frac{2}{3} \cdot \frac{3}{2} = n$

* Complete #1-4, 7 *

Objective: Simplify the expression and state the properties used.

10 $7 \cdot 0 - (7)(1)$	11 $8(\frac{1}{8}) \cdot 0 \cdot 1$

Which of the properties of real numbers are illustrated by the following situations? Explain your reasoning.

1. One team scores 3 runs in the first inning and 2 runs in the fourth inning. The other team scores 2 runs in the first inning and 3 runs in the fourth. In the fifth inning, the score is tied. $3+2=2+3$ commutative addition

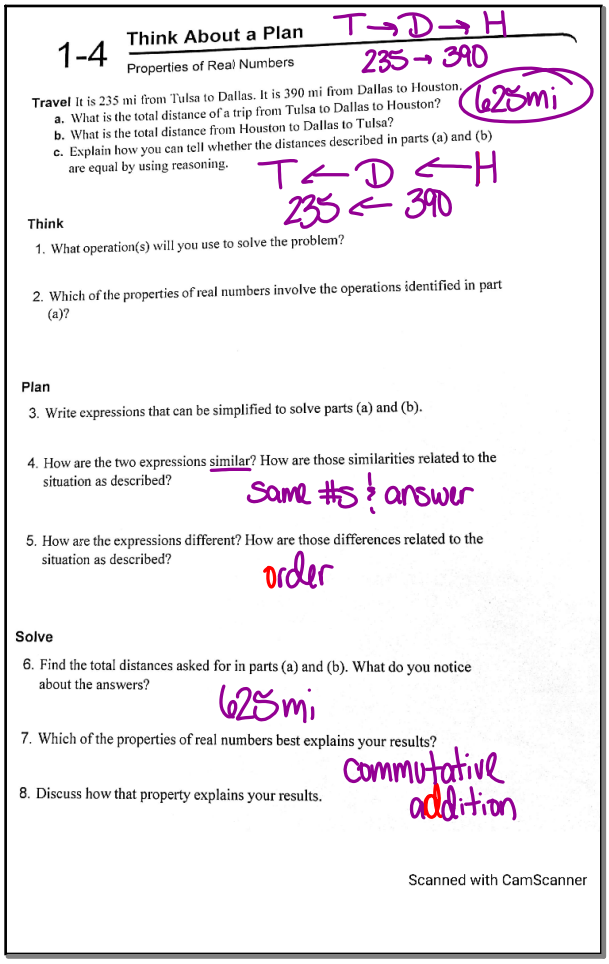
2. Your friend gets a job making $9.50 per hour. One week she takes a vacation and does not work. She makes no money that week. $9.50x$ zero $9.50(0)=0$

3. In putting together a mixture of fertilizer, a gardener mixes nitrogen and phosphorus before adding potassium. The next day the gardener mixes phosphorus and potassium before adding nitrogen. The two mixtures are exactly the same. associative addition (nitrogen + phosphorus) + potassium

4. A restaurant received two orders from the apartment managers of two different apartment buildings. The first apartment manager said he was ordering 3 meals each for the occupants of 4 different apartments. The second said he was ordering 4 meals each for the occupants of 3 different apartments. The apartment managers ordered the same number of meals. $3 \cdot 4 = 12 = 4 \cdot 3$ commutative multiplication

5. The owner of a theater checked how much money was in the box office 10 minutes before a show began. No tickets were purchased in the last 10 minutes, so the owner was not surprised that the final amount of money was the same as when when he previously checked. $\$20 + 0 = \$20$ identity addition

6. Usually, when Marty makes pancakes for his kids, he changes the amount of each ingredient depending on how many servings he is making. Since he was making the exact number of servings the recipe called for, he was able to use the numbers published in the cook book. multiply by 1 identity multiplication



1-4 **Think About a Plan**
Properties of Real Numbers

T → D → H
235 → 390
625 mi

Travel It is 235 mi from Tulsa to Dallas. It is 390 mi from Dallas to Houston.
a. What is the total distance of a trip from Tulsa to Dallas to Houston?
b. What is the total distance from Houston to Dallas to Tulsa?
c. Explain how you can tell whether the distances described in parts (a) and (b) are equal by using reasoning.

T ← D ← H
235 ← 390

Think

1. What operation(s) will you use to solve the problem?

2. Which of the properties of real numbers involve the operations identified in part (a)?

Plan

3. Write expressions that can be simplified to solve parts (a) and (b).

4. How are the two expressions similar? How are those similarities related to the situation as described?
same #s ! answer

5. How are the expressions different? How are those differences related to the situation as described?
order

Solve

6. Find the total distances asked for in parts (a) and (b). What do you notice about the answers?
625 mi

7. Which of the properties of real numbers best explains your results?
commutative addition

8. Discuss how that property explains your results.

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Classify the given number.

-13

integer $\mathbb{Z}$
rational $\mathbb{Q}$
real $\mathbb{R}$

Classify the given number.

$\sqrt{3}$ irrational
real ℝ

Simplify.

$6-9+2-5-(-4)$

$6-9+2-5+4$

$-3+2-5+4$

$-1-5+4$

$-6+4$

-2

Simplify.

$$7 \cdot 2 \div 14 + 3 - (-4)$$

$7 \cdot 2 \div 14 + 3 + 4$

$14 \div 14 + 3 + 4$

$1 + 3 + 4$

$4 + 4$

8

Multiply.

$$2\frac{3}{4} \cdot 1\frac{1}{2}$$

$\frac{11}{4} \cdot \frac{3}{2} = \frac{33}{8}$

Operations on Rational Numbers (Fractions):

- turn all mixed numbers into improper fractions first

$$a\frac{b}{c} = \frac{ac+b}{c}$$

- when multiplying, reduce any numerator to any denominator first and then multiply straight across

$$-5\frac{5}{6} \cdot 4\frac{2}{5}$$

$$-\frac{35}{6} \cdot \frac{22}{5} = -\frac{77}{3}$$

Operations on Rational Numbers (Fractions):

- turn all mixed numbers into improper fractions first

$$a\frac{b}{c} = \frac{ac+b}{c}$$

- when dividing, find the reciprocal of the fraction you are dividing by and multiply it by the first fraction (be sure to reduce before multiplying)

$$-7\frac{1}{4} \div \left(-2\frac{7}{8}\right)$$

$$-\frac{29}{4} \div -\frac{23}{8}$$

$$-\frac{29}{4} \cdot -\frac{8}{23} = \frac{58}{23}$$

Simplify.

$$-5\frac{5}{6}\cdot 2\frac{2}{5}$$

$$-\frac{\cancel{35}^{7}}{\cancel{6}_{1}}\cdot\frac{\cancel{12}^{2}}{\cancel{5}_{1}} = -\frac{14}{1} = -14$$

Simplify.

$$-5\frac{1}{4}\div\left(-2\frac{3}{8}\right)$$

$$-\frac{21}{4}\div-\frac{19}{8}$$

$$-\frac{21}{\cancel{4}_{1}}\cdot-\frac{\cancel{8}^{2}}{19}$$

$$\frac{42}{19}$$

Assignment:

Operations on Rational Numbers
#1-8

and

The Distributive Property
#1-15