

**Partial credit is based on work shown! Do NOT use a calculator on this test!!**

6pts

1. a. Using a method we discussed in class, compare the size of  $\frac{7}{10}$  and  $\frac{11}{15}$ . Which is bigger? \_\_\_\_\_

b. Find a fraction **between**  $\frac{7}{10}$  and  $\frac{11}{15}$ . Show your work.

c. Which property of fractions does this illustrate? \_\_\_\_\_

6pts

2. **Show** how to illustrate  $\frac{1}{6}$  of  $\frac{4}{5}$ , using a rectangular diagram (with each fraction and answer labeled).

6pts

3. When you multiply whole numbers the product is larger than either of the original numbers.

a. Is this also true for proper fractions? \_\_\_\_\_ **Explain** and give an example:

b. Is this also true for improper fractions? \_\_\_\_\_ **Explain** and give an example:

8pts

4. a. List the elements in the set of integers: { \_\_\_\_\_ }

b. Is the set of **integers** closed for **subtraction**? \_\_\_\_\_

Explain:

c. Is the set of **integers** closed for **division**? \_\_\_\_\_

Explain:

10pts

5. We studied four different ways to illustrate **integer arithmetic**.

a. Use a **number line** and a **set model** to illustrate why  $(4) - (7) = -3$ .

b. Building from the fact that  $(2)(-4) = -8$ , finish this **number pattern** to illustrate why  $(-3)(-4) = +12$ .

$$(2)(-4) = -8$$

$$(1)(-4) = -4$$

$$(0)(-4) = \underline{\quad}$$

$$\underline{\quad} = \underline{\quad}$$

$$\underline{\quad} = \underline{\quad}$$

4pts

6. Simplify each of the following using rules of exponents. Show your work to illustrate the rule used.

a.  $4^7 \cdot 4^{-5} =$

b.  $\frac{6^5}{6^{-3}}$

6pts

7. Show your steps to illustrate an easy way to divide these numbers; write your answer in scientific notation.

$$\frac{1.5 \times 10^{-5}}{3.0 \times 10^{-12}}$$

9pts

8. Write each decimal as an equivalent fraction. Simplify, if possible.

a. 0.24

b. 0.24242424...

c. 0.524242424...

12pts

9 a. **Explain** an easy method to **mentally calculate** 10 % of any number. Also give an example.

b. **Explain** an easy method to **mentally calculate** 20 % of any number. Also give an example.

c. **Explain** an easy method to **mentally estimate** 68 % of any number. Also give an example.

8pts

10a. Show an easy way to estimate this product using a fraction with a compatible number.

$$0.34 \times 625 =$$

b. Calculate mentally using the distributive property. (Show your thought process.)

$$8 \times \left(9\frac{3}{4}\right) =$$

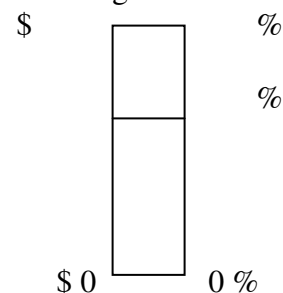
6pts

11. A photograph measuring 5 inches by 7 inches is to be enlarged so that the smaller side, when enlarged, will be 8 inches. When enlarged, the longer side will be \_\_\_\_\_ inches. Solve using a proportion, showing your work.

9 pts

12.a. A school fund-raising project has collected \$744, which is 62 % of its goal. What is the amount of the goal for this project? \_\_\_\_\_ Solve using a simple algebraic equation, showing your work.

b. Illustrate this problem by shading & putting appropriate numbers on this diagram.



10pts

13. a. State the theorem from section 7.1 that lets you decide whether a fraction will have a terminating decimal representation.

b. Without dividing to convert the following fractions to decimals, state whether or not each would be a terminating decimal, then explain how to determine this using the theorem from part a.

$$\frac{7}{560} \quad \underline{\hspace{2cm}}$$

Explain:

$$\frac{7}{42} \quad \underline{\hspace{2cm}}$$

Explain: