

Name: _____

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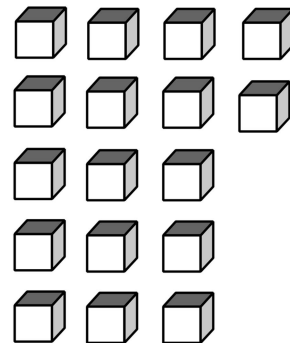
DIVIDING WHOLE NUMBERS WITH DECIMAL REMAINDERS

N-GEN MATH[®] 6



You've worked before with dividing two whole numbers that have remainders and then writing them as mixed numbers. We now want to learn how to write these **quotients** with decimals instead of fractions.

Exercise #1: Consider the problem $17 \div 5$. The diagram shows 17 cubes to help visualize this problem.



(a) If each of these 17 cubes was broken into tenths, how many tenths would there be? Fill in the blank below.

17 wholes = _____ tenths

(b) Divide the number of tenths you found in (a) by 5 instead using long division.

$$5 \overline{) \quad \quad \quad}$$

(c) Based on what you found in (b) fill in the following and express your answer as a decimal.

$$17 \div 5 = \frac{\quad}{\quad} = \underline{\quad}$$

(d) Now perform the division using the standard method below.

$$5 \overline{) 17.0}$$

We can divide two whole numbers that have remainders by simply performing the standard long division algorithm **beyond the decimal point**.

Exercise #2: Find each of the following quotients in decimal form.

(a) $4 \overline{) 26.0}$

(b) $8 \overline{) 58.0}$

(c) $5 \overline{) 23.0}$



Sometimes when we do division involving decimals, those decimals **never terminate**, but start to **repeat a pattern**. Let's see how to recognize when this is happening and how to state your answer.

Exercise #3: Find each of the following quotients. Use the standard method until it terminates or you see a repeating pattern and then use the repeating decimal bar (known as a vinculum) to represent the repeating portion.

(a) $3\overline{)8.0}$

(b) $8\overline{)55.0}$

(c) $6\overline{)35.0}$

Exercise #4: Jason pours 28 gallons of water into 6 buckets that each hold the same amount. How many gallons does each bucket contain? Round your answer to the nearest *tenth* of a gallon. Justify your answer.

One of the great results from dividing two whole numbers using this method is that we can **turn a fraction into an equivalent decimal** because all fractions are just division problems.

Exercise #5: Convert each of the following fractions into an equivalent decimal by using long division. If the decimal begins to repeat itself use the repeating decimal bar to show that. Show your work.

(a) $\frac{1}{4}$

(b) $\frac{1}{3}$

(c) $\frac{3}{8}$

(d) $\frac{2}{5}$



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DIVIDING WHOLE NUMBERS WITH DECIMAL REMAINDERS
N-GEN MATH[®] 6 HOMEWORK

FLUENCY

1. Find each of the following quotients using the standard method for long division. Each decimal will terminate.

(a) $4 \overline{)31.0}$

(b) $2 \overline{)47.0}$

(c) $5 \overline{)112.0}$

(d) $8 \overline{)75.0}$

(e) $15 \overline{)468.0}$

(f) $20 \overline{)394.0}$

2. Find each of the following quotients using the standard method for long division. Each decimal will begin to repeat. Use the repeating decimal bar to indicate that portion.

(a) $3 \overline{)13.0}$

(b) $6 \overline{)47.0}$

(c) $11 \overline{)50.0}$

(d) $15 \overline{)92.0}$

(e) $9 \overline{)23.0}$

(f) $6 \overline{)70.0}$



3. All fractions have decimal forms. We saw some of these in the lesson. See if you can match the fraction with its decimal. Draw lines that connect equivalent numbers.

$$\frac{1}{2}$$

$$\frac{3}{4}$$

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

$$\frac{1}{4}$$

$$\frac{1}{6}$$

$$\frac{1}{8}$$

0.25

0.125

0.5

$0.\overline{3}$

0.75

$0.1\overline{6}$

4. One of the most interesting fractions to change into a decimal is $\frac{1}{7}$ because it takes quite a few decimals to repeat its pattern. How many decimal places does it take for it to repeat? Determine by doing the long division to the right. (There are more zeros than needed.)

$$\frac{1}{7} = 7 \overline{)1.0000000000}$$

USING YOUR MATH

5. The Fruit Bud Families Maple Syrup company made 38 gallons of syrup this year. If they want to split that up amongst 5 families evenly, how many gallons of maple syrup will each family receive? Justify your answer.
6. Four friends set up a lemonade stand and earn \$59. If they split that amount evenly between the four of them, how much money does each earn? Justify your answer.

