Name _____ Date _____ Class _____

SKILL 18: Dividing to Change a Fraction to a Decimal

To change a fraction to a decimal, divide the numerator by the denominator.

Example 1

Write $\frac{2}{5}$ as a decimal.

To write $\frac{2}{5}$ as a decimal, divide 2 by 5.

The fraction $\frac{2}{5}$ and the decimal 0.4 name the same number.

$$\begin{array}{r} 0.4 \\ 5\overline{)2.0} \\ -20 \\ \hline 0 \end{array}$$ ← The remainder in the tenths place is zero.

We call 0.4 a **terminating decimal** because it terminates, or ends.

Example 2

Write $\frac{2}{9}$ as a decimal.

To write $\frac{2}{9}$ as a decimal, divide 2 by 9.

The fraction $\frac{2}{9}$ and the decimal 0.222... name the same number.

$$\begin{array}{r} 0.222\ldots \\ 9\overline{)2.000} \\ -18 \\ \hline 20 \\ -18 \\ \hline 20 \\ -18 \\ \hline 2 \end{array}$$ ← If you keep dividing you always get a nonzero remainder.

The repeating digit can be shown with a bar as $0.\overline{2}$.

We call this type of decimal a **repeating decimal** because a pattern of digits repeats.

Example 3

Write 0.12333... using the bar notation.

Only the digit that repeats is shown with a bar, so 0.12333... is equal to $0.12\overline{3}$.

Guided Practice

1. Rewrite 0.333... using bar notation. _____

2. Rewrite $0.\overline{27}$ using the three dots. _____

Convert each fraction to a decimal by dividing. Tell if it is terminating or repeating.

3. $\frac{3}{8}$ _____ **4.** $\frac{7}{9}$ _____

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SKILL 18: Practice

Rewrite using bar notation.

1. 0.77777... _____
2. 0.585858... _____
3. 2.656565... _____
4. 7.20222... _____
5. 4.933333... _____
6. 3.001001001... _____

Rewrite using the three dots.

7. $0.\overline{25}$ _____
8. $0.\overline{6}$ _____
9. $2.0\overline{4}$ _____
10. $3.\overline{027}$ _____
11. $4.7\overline{1}$ _____
12. $9.0\overline{03}$ _____

Write each fraction as a decimal. Tell whether it is terminating or repeating.

13. $\frac{2}{3}$ _____
14. $\frac{7}{10}$ _____
15. $\frac{15}{6}$ _____
16. $\frac{23}{33}$ _____
17. $\frac{1}{8}$ _____
18. $\frac{6}{11}$ _____
19. $\frac{5}{6}$ _____
20. $\frac{21}{40}$ _____
21. $\frac{49}{50}$ _____
22. $\frac{14}{9}$ _____

Solve.

23. A computer word processing program allows users to select a font size of 8 point, 10 point, 12 point, or 16 point.

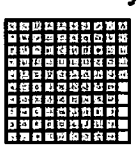
    These sizes are equivalent to $\frac{1}{9}$ in., $\frac{5}{36}$ in., $\frac{1}{6}$ in., and $\frac{2}{9}$ in., respectively. Write each font size as a decimal.

    _____

24. Which shows $\frac{4}{9}$ as a decimal? *Skill 18*

    A 0.4 **C** 0.44
    B $0.\overline{4}$ **D** $0.0\overline{4}$

25. What is the simplest form of the fraction shown by the picture? *Skill 17*



    F $\frac{95}{100}$ **H** $\frac{9}{10}$
    G $\frac{19}{20}$ **J** $\frac{1}{20}$