

4-8 Writing Fractions as Decimals - Practice and Problem Solving

Write each fraction or mixed number as a decimal.

11. $\frac{1}{20}$

Since 20 is a factor of 100, write an equivalent fraction with a denominator of 100.

$$\begin{array}{c} \xrightarrow{\times 5} \\ \frac{1}{20} = \frac{5}{100} \\ \xrightarrow{\times 5} \\ = 0.05 \end{array}$$

13. $\frac{77}{200}$

Since 200 is a factor of 1,000, write an equivalent fraction with a denominator of 1,000.

$$\begin{array}{c} \xrightarrow{\times 5} \\ \frac{77}{200} = \frac{385}{1000} \\ \xrightarrow{\times 5} \\ = 0.385 \end{array}$$

15. $\frac{5}{8}$

$$\begin{array}{r} \frac{5}{8} \rightarrow \\ 0.625 \\ 8 \overline{) 5.000} \\ \underline{-48} \\ 20 \\ \underline{-16} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

So, $\frac{5}{8} = 0.625$.

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17. $\frac{9}{16}$

$$\begin{array}{r} \frac{9}{16} \rightarrow \\ 0.5625 \\ 16 \overline{) 9.0000} \\ \underline{-80} \\ 100 \\ \underline{-96} \\ 40 \\ \underline{-32} \\ 80 \\ \underline{-80} \\ 0 \end{array}$$

So, $\frac{9}{16} = 0.5625$.

19. $6\frac{1}{16}$

First, write $\frac{1}{16}$ as a decimal.

$$\begin{array}{r} 0.0625 \\ 16 \overline{) 1.0000} \\ \underline{-96} \\ 40 \\ \underline{-32} \\ 80 \\ \underline{-80} \\ 0 \end{array}$$

So, $6\frac{1}{16} = 6.0625$.

21. $12\frac{43}{80}$

First, write $\frac{43}{80}$ as a decimal.

$$\begin{array}{r} 0.5375 \\ 80 \overline{) 43.0000} \\ \underline{-400} \\ 300 \\ \underline{-240} \\ 600 \\ \underline{-560} \\ 400 \\ \underline{-400} \\ 0 \end{array}$$

So, $12\frac{43}{80} = 12.5375$.

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23. **GAMES** A handheld video game is $5\frac{13}{16}$ inches long. Express this length as a decimal.

First, write $\frac{13}{16}$ as a decimal.

$$= 0.8125$$

So, $5\frac{13}{16} = 5.8125$ The video game is 5.8125 inches long.

Replace each \bullet with $<$, $>$, or $=$ to make a true sentence.

25. $\frac{3}{4} \bullet 0.8$

First, write $\frac{3}{4}$ as a decimal.

Since 4 is a factor of 100, write an equivalent fraction with a denominator of 100.

$$\begin{array}{c} \xrightarrow{\times 25} \\ \frac{3}{4} = \frac{75}{100} \\ \xleftarrow{\times 25} \\ = 0.75 \end{array}$$

Since $0.75 < 0.8$, $\frac{3}{4} < 0.8$.

27. $0.72 \bullet \frac{3}{4}$

First, write $\frac{3}{4}$ as a decimal.

Since 4 is a factor of 100, write an equivalent fraction with a denominator of 100.

$$\begin{array}{c} \xrightarrow{\times 25} \\ \frac{3}{4} = \frac{75}{100} \\ \xleftarrow{\times 25} \\ = 0.75 \end{array}$$

Since $0.72 < 0.75$, $0.72 < \frac{3}{4}$.

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29. TRACK Paloma can run the 100-meter dash in $16\frac{1}{5}$ seconds. Savannah's best time is 19.8 seconds. How much faster is Paloma than Savannah in the 100-meter dash?

First, write $\frac{1}{5}$ as a decimal.

Since 5 is a factor of 10, write an equivalent fraction with a denominator of 10.

$$\begin{array}{c} \times 2 \\ \curvearrowright \\ \frac{1}{5} = \frac{2}{10} \\ \times 2 \\ \curvearrowright \\ = 0.2 \end{array}$$

Paloma's time is 16.2 seconds.

Subtract Paloma's time from Savannah's time.

$$\begin{array}{r} 19.8 \\ - 16.2 \\ \hline 3.6 \end{array}$$

So, Paloma is 3.6 seconds faster than Savannah in the 100-meter dash.

CHALLENGE Express each fraction as a decimal.

31. $\frac{1}{3}$

$$\begin{array}{r} 0.333... \\ 3 \overline{)1.000} \\ \underline{-9} \\ 10 \\ \underline{-9} \\ 10 \\ \underline{-9} \\ 1 \end{array}$$

33. $\frac{4}{9}$

$$\begin{array}{r} 0.444... \\ 9 \overline{)4.000} \\ \underline{-36} \\ 40 \\ \underline{-36} \\ 40 \\ \underline{-36} \\ 4 \end{array}$$

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35. **CHALLENGE** Write a fraction that can be expressed as a repeating decimal when two digits repeat.

Sample answer: $\frac{7}{11} = 0.636363\dots$

$$\begin{array}{r} 0.6363\dots \\ 11 \overline{)7.0000} \\ \underline{-66} \\ 40 \\ \underline{-33} \\ 70 \\ \underline{-66} \\ 40 \\ \underline{-33} \\ 7 \end{array}$$

37. **WRITING IN MATH** Summarize the two methods for expressing fractions as decimals. Describe when it is appropriate to use each method in your summary.

Method 1: For fractions whose denominators are factors of 10, 100, or 1,000, you can write equivalent fractions with these denominators. Then use place value to write the fraction as a decimal.

Method 2: For fractions whose denominators are not factors of 10, 100, or 1,000, use paper and pencil to divide the numerator by the denominator.

39. The formula $d = v + \frac{1}{20}v^2$ can be used to find the distance d required to stop a certain model car traveling at v miles per hour. Which of the following best represents $\frac{1}{20}$?

- F** 0.05
G 0.21
H 0.4
J 1.2

Since 20 is a factor of 100, write an equivalent fraction with a denominator of 100.

$$\begin{array}{ccc} & \times 5 & \\ \frac{1}{20} & = & \frac{5}{100} \\ & \times 5 & \\ & = 0.05 & \end{array}$$

The correct answer is F.

Write each decimal as a fraction or mixed number in simplest form.

41. 0.73

$$0.73 = \frac{73}{100}$$

43. 11.14

$$\begin{aligned} 11.14 &= 11\frac{14}{100} \\ &= 11\frac{7}{50} \quad \text{Divide by the GCF, 2.} \end{aligned}$$

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45. **FOOD** Twenty out of two dozen cupcakes are chocolate cupcakes. Write this amount as a fraction in simplest form. (*Hint*: 1 dozen = 12)

Write $\frac{20}{24}$ in simplest form.

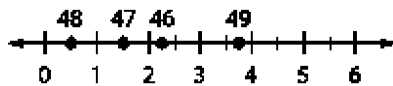
The GCF of 20 and 24 is 4.

$$\begin{array}{r} \div 4 \\ \overline{20} = \overline{5} \\ \overline{24} = \overline{6} \\ \div 4 \end{array}$$

So, $\frac{5}{6}$ of the cupcakes are chocolate.

PREREQUISITE SKILL Graph each number on the same number line.

47. 1.5



49. 3.75

