

Understand and Apply



1. A number like 2.45 can be written in expanded form by naming each part of the base ten block model.

$$\begin{aligned} 2.45 &= 2 \text{ large blocks} + 4 \text{ flats} + 5 \text{ rods} \\ &= 2 \text{ wholes} + 4 \text{ tenths} + 5 \text{ hundredths} \\ &= 2 \times 1 + 4 \times 0.1 + 5 \times 0.01 \\ &= 2 + 0.4 + 0.05 \end{aligned}$$

Use a base ten block model to write in expanded form each of the numbers from Problem 4 in *Concept Development*.

2. a) Write the number 34.6215 in expanded form using both words and decimals.
 b) Explain how you knew what the value of 5 was.
3. Write each number in expanded form.
 a) 121.04 b) 3652.145 c) 6.0004
4. Why is there a space between groups of digits after the decimal point in a number such as 2.014 54 but not in a number like 1.3217?
5. Sometimes it's helpful to use fractions to write a number in expanded form as follows:

$$4.053\ 16 = 4 + \frac{5}{100} + \frac{3}{1000} + \frac{1}{10\ 000} + \frac{6}{100\ 000}$$

Use fractions to write each number below in expanded form.

a) 7.356 b) 4.0732 c) 1.3002

6. Shannon used exponents to write 4.053 16 in expanded form as follows.

$$4.053\ 16 = 4 + \frac{5}{10^2} + \frac{3}{10^3} + \frac{1}{10^4} + \frac{6}{10^5}$$

Use exponents to write each number from Problem 5 in expanded form.

7. Use a flat to model $\frac{1}{10}$

- a) How many hundredths are in $\frac{1}{10}$?
 b) How many thousandths are in $\frac{1}{10}$?

8. Write each equivalent fraction.

$$\begin{array}{ll} \text{a)} \frac{1}{10} = \frac{\blacksquare}{100} & \text{b)} \frac{1}{10} = \frac{\blacksquare}{1000} \\ \text{c)} \frac{1}{100} = \frac{\blacksquare}{1000} & \text{d)} \frac{13}{100} = \frac{\blacksquare}{1000} \end{array}$$

9. Compare the numerators and denominators for each pair of fractions in Problem 8. Explain how equivalent fractions are created.

10. Write each fraction from Problem 8 as a decimal.
11. Match pairs that name the same amount.
- | | |
|------------------|---|
| a) 76 hundredths | b) $\frac{76}{1000}$ |
| c) 7.6 | d) $\frac{76}{10}$ |
| e) 0.0076 | f) 0.76 |
| g) 0.076 | h) $\frac{7}{1000} + \frac{6}{10\ 000}$ |
12. Would the value of 0.76 change if you wrote it as 0.760 or 0.7600? Explain.
13. When you read 1.753 aloud, you say "one and seven hundred fifty-three thousandths." Why do you read the decimal part of 1.753 as a number of thousandths when it also contains tenths and hundredths?
14. Write each number the way you would say it.
 a) 42.57 b) 192.4033 c) 10 999.999
15. Tina saved her money and bought a mountain bike. Her mother had given her \$191.49, which was half the cost. Tina wrote a cheque for the full cost of the bike. Show how she wrote the amount in words and in numbers on the cheque.
16. Use a calculator to add these numbers:
 • two and one hundred four thousandths
 • seven hundred five and seven hundred five thousandths
 • fourteen and one hundred fourteen ten-thousandths
17. Which of these numbers is the correct answer to Problem 16?
 a) 72.182 04 b) 7.218 204
 c) 721.8204 d) 7218.204