

(1) Understand factors by using rectangular arrays

Activity

Give your student 24 multilink cubes. Have her make as many different arrays with them as she can and record the results on graph paper. There are four possible arrays (the orientation does not matter). Write two multiplication equations for each.

The factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

Remind your student that the answer to a multiplication

problem is called the **product**. Tell him that the numbers that are multiplied by each other are called **factors**. A factor of 24 is a whole number that can be multiplied by another whole number to get the product 24. List the factors of 24: 1, 2, 3, 4, 6, 8, 12, 24. Ask him if 5 is a factor of 24. It is not. We cannot make an array of 24 with 5 on the side.

Give your student 5 cubes and ask her to make as many arrays as she can and list the factors of 5. She can only make one array, so 5 has only two factors, 1 and 5.

Discussion

Concept page 26

Point out that each of the factors in the second equation, $2 \times 3 \times 4 = 24$, can be multiplied by a single other number to give 24. $2 \times 12 = 24$, $3 \times 8 = 24$, and $4 \times 6 = 24$.

Tasks 1-5, pp. 27-28

For Task 2, you can give your student 16 cubes so that he can see if there are any other factors of 16 besides 1, 2, 4, 8, and 16.

Make sure your student understands the definition of a prime number and a composite number. Point out that 1 is neither a prime number nor a composite number, since it has only one factor.

For Tasks 4-5, allow your student to use multilink cubes to find the answers.

Workbook

Exercise 7, pp. 21-22 (answers p. 36)

In problem 5, all your student needs to do to determine if a number is not prime is to think of a number other than 1 and the number itself that is a factor. So 16, 27, and 21 are easily eliminated. She can then test various numbers as factors to determine that 13 and 19 are prime numbers. Or she can use multilink cubes.

1. 3, 6
2. 4 (1 and 16 are also factors of 16.)
4. (a) 1, 7 prime
(b) 1, 3, 9
(c) 1, 3 prime
(d) 1, 2, 3, 6, 9, 18
(e) 1, 11 prime
(f) 1, 3, 5, 15
(g) 1, 2, 5, 10
(h) 1, 13 prime
5. (a) 8, 10, 24
(b) 15, 20, 25

(4) Practice**Practice**

Practice B, p. 67

Tests**Tests**, Unit 2, 2A and 2B, pp. 37-42**Enrichment**

⇒ Amy and Zoe have the same number of coins.
After Amy gave Zoe 24 of her coins, Zoe had 4 times as many as Amy. How many coins do they have altogether?

Because we are told how many more one has than the other after the transfer of coins, we can draw that first.

Amy
Zoe

Now we need to move some of the bar from Zoe to Amy to get the equal amount they started with. To do that, we need half the difference. That will be one and a half units. To avoid half-units, we can divide all the units in half.

Amy
Zoe

So now we can move three units to Amy, showing that they both started with the same number of coins.

Amy
Zoe

Amy gave 3 units to Zoe, so 3 units must be 24.
Altogether, they have 10 units.

$$3 \text{ units} = 24$$

$$1 \text{ unit} = 24 \div 3 = 8$$

$$10 \text{ units} = 8 \times 10 = 80$$

They have 80 coins altogether.

1. (a) 6033 (b) 8428 (c) 17,250

2. (a) 25,290 (b) 27,419 (c) 56,322

3. (a) 703 (b) 1009 (c) 502

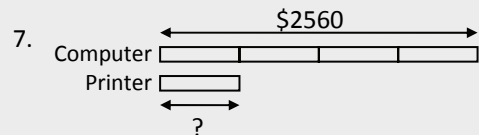
4. (a) 1202 (b) 496 (c) 909

5. (a) 918 r5 (b) 475 (c) 329 r9

6. Last month: 1380

This month: $1380 \times 3 = \mathbf{4140}$

He sold 4140 cakes this month.



$$\$2560 \div 4 = \mathbf{\$640}$$

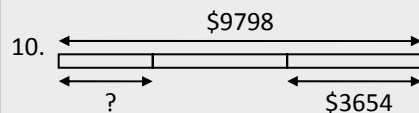
The printer costs \$640.

8. $1536 \div 6 = \mathbf{256}$

Each box had 256 rubber bands.

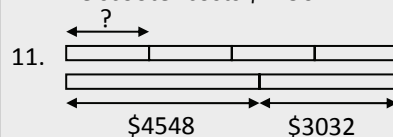
9. $3750 \text{ kg} \div 10 \text{ kg} = \mathbf{375}$

He had 375 bags of potatoes.



$$\$9798 - (2 \times \$3654) = \mathbf{\$2490}$$

The scooter costs \$2490.



$$(\$3032 + \$4548) \div 4 = \mathbf{\$1895}$$

He earned \$1895 each month.

(3) Find the fractional part of a whole**Discussion**

Tasks 7-9, p. 101

7: To find 6 out of 8, we can put each coin into a group of one. There are 8 equal groups. Each group is $\frac{1}{8}$ of the total set of coins, so 6 of them is $\frac{6}{8}$. But, as we found earlier, we could put the coins into larger groups. If we put 2 coins in each group, we have only pennies in one group, and only dimes in the other 3 groups, with a total of 4 groups. 6 coins is also 3 out of 4 groups, or $\frac{3}{4}$ and is equivalent to $\frac{6}{8}$. So all we have to do to find what fraction of the coins are dimes is put the number of dimes over the total number of coins and simplify the fraction.

9: When we find a measurement as a fraction of a total, both need to be in the same units. So to find 16 cm out of 1 m, we need to convert the meters into centimeters.

To emphasize this point, you can show your student a meter stick. Ask him to locate 25 cm on the meter stick and tell you what fraction of the meter it is. 25 centimeters is one fourth of the way along the meter stick. We do not find what fraction 25 cm is of 1 m by putting 25 over 1, but rather 25 cm over 100 cm. Both units of measurement need to be the same in order to compare them. We convert the larger unit (meters, 1 m) to the smaller unit (centimeters, 100 cm).

$$7. \frac{3}{4}$$

$$8. \frac{1}{7}; \frac{1}{7}$$

$$9. \frac{4}{25}$$

25 cm is what fraction of 1 m?

$$\frac{25 \text{ cm}}{100 \text{ cm}} = \frac{1}{4}$$

$$25 \text{ cm} = \frac{1}{4} \text{ of } 1 \text{ m}$$

Activity

Ask your student to find what fraction of a dollar a nickel is.

Since there are 20 nickels in a dollar, then one nickel is $\frac{1}{20}$ of a dollar. We can also convert both the nickel and the dollar to cents and simplify the fraction. Ask her to find what fraction of a dollar 1 penny, 1 dime, and 1 quarter are.

Ask your student to do the following problems.

- ⇒ What fraction of a gallon is 6 cups?
- ⇒ 2 months is what fraction of a year?
- ⇒ What fraction of 3 feet is 6 inches?

Workbook

Exercise 15, pp. 98-99 (answers p. 119)

$$1 \text{ nickel is } \frac{5\text{¢}}{100\text{¢}} = \frac{1}{20} \text{ of } \$1.$$

$$1 \text{ penny is } \frac{1\text{¢}}{100\text{¢}} = \frac{1}{100} \text{ of } \$1.$$

$$1 \text{ dime is } \frac{10\text{¢}}{100\text{¢}} = \frac{1}{10} \text{ of } \$1.$$

$$1 \text{ quarter is } \frac{25\text{¢}}{100\text{¢}} = \frac{1}{4} \text{ of } \$1.$$

$$\frac{6 \text{ c}}{16 \text{ c}} = \frac{3}{8}$$

$$6 \text{ cups is } \frac{3}{8} \text{ of a gallon.}$$

$$\frac{2 \text{ months}}{12 \text{ months}} = \frac{1}{6}$$

$$2 \text{ months is } \frac{1}{6} \text{ of a year.}$$

$$\frac{6 \text{ in.}}{36 \text{ in.}} = \frac{1}{6}$$

$$6 \text{ inches is } \frac{1}{6} \text{ of } 3 \text{ ft.}$$