

CHAPTER

18

Direct Proportion

Vocabulary:

direct proportion

Chapter Outcomes:

- Solve problems involving direct proportion.



Direct proportion is a relationship that occurs very often in real life. It happens in the number of items bought and number of dollars spent, the number of kilometres travelled and number the number of litres of gasoline used, the number of food servings to the number of persons and so on. Therefore, if one person bought one desert that cost \$40, four persons will pay a proportional sum of money for four of the same kind of desert.

Getting Ready for Chapter 18

Write each fraction in simplest form.

1. $\frac{2}{8}$	2. $\frac{15}{45}$	3. $\frac{12}{16}$
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Solve.

4. $\$12.00 \div 4 =$
5. $26 \times 6 =$
6. Five apples cost \$25.00. How much does one apple cost?
7. Twelve shirts cost \$480. If the price of each shirt is the same, what is the cost of one shirt?
8. Anna reads 12 pages in 2 hours. If she reads at the same rate, how many pages would she read in 1 hour?
9. The cost of a food item at two different shops are shown below.

Shop A: \$15.50 for 5 packs of corn curls.

Shop B: \$12.60 for 3 packs of corn curls.

- (a) What is the unit price for the item at each shop?
- (b) At which shop does the item cost less?

Direct Proportion

Teaching Point 1:

How can you solve problems involving direct proportions?

Direct proportion is when **two quantities** are directly related; an **increase** in one quantity results in a **proportionally similar increase** in the other quantity.

If 3 oranges sell for \$12, find the selling price for 18 oranges.

Method: Use the Unitary Method

Find the selling price of 1 orange; then the selling price of any quantity of oranges.

$$\text{S.P. of 3 oranges} = \$12$$

$$\text{S.P. of 1 orange} = \frac{\$12}{3} \leftarrow \text{Divide to find for 1.}$$

$$\text{S.P. of 18 oranges} = \frac{\$12}{3} \times \frac{18}{1} \leftarrow \text{Multiply to find for 18.}$$

$$= \$72$$

So, the selling price for 18 oranges is \$72.

Activity 1:

Solve.

1. Five pens cost \$19.75. What is the cost of:
(a) 1 pen (b) 10 pens (c) 20 pens
2. 4 packets of balloons cost \$48.00. What is the cost of 7 packets of balloons?

3. Seven tickets to a concert cost \$175.00. How much do 4 tickets cost?
4. You can buy 6 metres of fabric for \$66.00. How many metres of the same material could you buy with \$84.00?
5. Find the cost of 8 cartons of juice if 10 cartons cost \$45.00.
6. A worker is paid \$800 a week if he works 40 hours. How much money should he receive if he works 32 hours?
7. A man receives \$390 for the 3 days that he works. How much should he receive if he works 15 days?



8. Two limes are used to make 4 glasses of juice. How many glasses of juice can be made with 6 limes?
9. Peanuts are filled in packets for sale. The table below shows the total grams of peanuts in various numbers of packets.

Number of packets	2	4	___
Grams of peanuts	90 g	___	270 g

Complete the table.

10. To make orange juice, you need 1.5 litres of orange concentrate, 2 litres of water, and 100 grams of sugar. Orange concentrate is sold in 3-litre packs. How much water and sugar will I need to add to a 3 litre pack of concentrate?

11. To make cupcakes for 4 persons you need the following ingredients:

200 grams flour
160 grams sugar
100 grams of butter
4 eggs

- (a) How much of each ingredient do you need to make cupcakes for 10 persons?
- (b) If you only had 100 grams of flour how much of each ingredient would you now need?
12. The exchange rate for the Trinidad and Tobago dollar to the United States dollar is shown below:

Country	Exchange Rate to United States \$1.00
Trinidad and Tobago	TT\$6.77

How many Trinidad and Tobago dollars must be exchanged for:

- (a) US\$5 (b) US\$8 (c) US\$10
13. At the hardware, 4 m of wood cost \$54.
 - (a) What is the cost of 8 m of wood?
 - (b) How much wood can you buy with \$135?
14. Mother uses one loaf of sliced bread to make 12 cheese sandwiches. Each loaf has 24 slices of bread.
 - (a) How many slices of bread would she use to make 200 sandwiches?
 - (b) How many loaves of bread would she need to buy?