

CHAPTER

6

Multiplication and Division of Whole Numbers

Vocabulary:

estimate
compatible numbers
compensation
inverse operations
quotient
product
identity property
commutative property
associative property
distributive property

Chapter Outcomes:

- Solve problems using whole numbers involving the four operations.
- Demonstrate an understanding of algorithms, mental strategies and estimation strategies.



We all use multiplication and division everyday whether we're aware of it or not. Ask any market vendor and he will tell you how important multiplication and division are when it comes to estimating the amount of money he will earn at the end of the day if all of his produce is sold.

Getting Ready for Chapter 6

Solve the problems below.

1.
$$\begin{array}{r} 45 \\ \times 9 \\ \hline \hline \end{array}$$
2. $126 \div 3 =$
3. $101 \times 13 =$
4. $5 \overline{)155}$



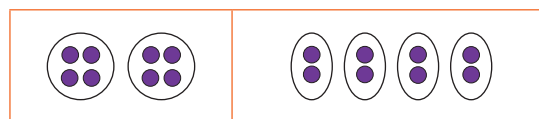
5. Write a multiplication fact and a division fact for the array of tiles above.
6. Round each number to the nearest 10.
 - a) 17
 - b) 125
 - c) 2 631
7. Round each number to the nearest 100.
 - a) 3 403
 - b) 642
 - c) 819

Multiplication Properties

Teaching Point 1:

Commutative Property of Multiplication:

Multiply factors in any order. The product will be the same.



$$4 \times 2 = 2 \times 4$$

Identity Property of Multiplication:

Multiply any number by 1, the product is that number.

$$6 \times 1 = 6$$

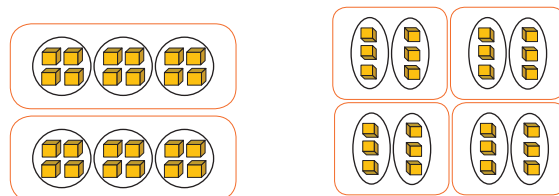
Zero Property of Multiplication:

Multiply a number with zero, the product is 0.

$$9 \times 0 = 0$$

Associative Property of Multiplication:

Change the grouping of the factors. The product will be the same.



$$\begin{array}{l} (4 \times 3) \times 2 = \\ \swarrow \quad \searrow \\ 12 \times 2 = 24 \end{array}$$

$$\begin{array}{l} 4 \times (3 \times 2) = \\ \quad \swarrow \quad \searrow \\ 4 \times 6 = 24 \end{array}$$

Activity 1:

Write the unknown factor.

1. $4 \times 2 = \square \times 2$ 2. $6 \times 9 = 9 \times \square$
3. $8 \times \square = 5 \times 8$ 4. $\square \times 8 = 8 \times 10$

Multiply with 1 and 0. Write the product.

5. $239 \times 0 =$ 6. $615 \times 1 =$
7. $308 \times 1 =$ 8. $712 \times 0 =$

Write another way to group the factors.
Then find the product.

9. $(2 \times 5) \times 10$ 10. $5 \times (6 \times 9)$
11. $3 \times (7 \times 4)$ 12. $(1 \times 7) \times (9 \times 3)$

Find the unknown factor.

13. $7 \times (2 \times \square) = 56$
14. $90 = (3 \times \square) \times 6$
15. $0 = \square \times (12 \times 11)$
16. $8 \times (5 \times \square) = 400$
17. $12 \times 10 = 24 \times \square$
18. $\square \times 6 = 2 \times 21$
19. Javan works at the grocery 3 days each week. He works 4 hours each day and earns \$10 an hour. Write a

multiplication sentence to show how much money Javan earns each week.

Teaching Point 2:

How can you use the **distributive property** to find the product of 18×9 ?

Break apart 18.

$$18 = 10 + 8$$

Think of 18×9 as

$$(10 \times 9) + (8 \times 9)$$

Find each product.

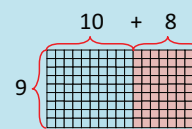
$$90 + 72$$

Add the products

$$90 + 72 = 162$$

Area Model for

$$(10 \times 9) + (8 \times 9)$$



Activity 2:

Use the distributive property to multiply.
Draw an area model to help you.

- | | |
|---|---|
| 1. $24 \times 7 =$ | 2. $36 \times 8 =$ |
| 3. $33 \times 4 =$ | 4. $19 \times 3 =$ |
| 5. $32 \times 6 =$ | 6. $17 \times 9 =$ |
| 7. $\begin{array}{r} 48 \\ \times 9 \\ \hline \hline \end{array}$ | 8. $\begin{array}{r} 21 \\ \times 5 \\ \hline \hline \end{array}$ |

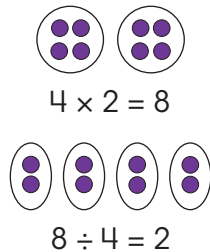
$$\begin{array}{r} 9. \quad 34 \\ \times 8 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 10. \quad 28 \\ \times 7 \\ \hline \hline \end{array}$$

Relate Multiplication and Division

Teaching Point 1:

Multiplying by 2 and dividing by 2 are inverse operations.



Operations that undo each other are **inverse operations**.

Activity 1:

Write the inverse operation of each number sentence.

1. $7 \times 6 = 42$
2. $12 \times 9 = 108$
3. $99 \div 9 = 11$
4. $26 \div 2 = 13$
5. $12 \times 12 = 144$
6. $48 \div 8 = 6$

Activity 2:

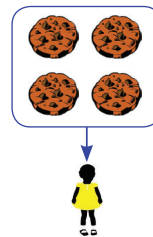
Write the related multiplication and division facts for each set of numbers.

1. 6, 9, 54
2. 7, 12, 84
3. 11, 12, 132
4. 8, 9, 72
5. 3, 13, 39
6. 6, 15, 90

Division Rules for 1 and 0

Teaching Point 1:

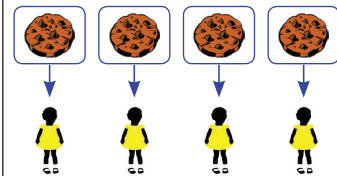
Rule 1:



Share 4 cookies equally with 1 child. One child gets 4 cookies.

$$4 \div 1 = 4$$

Rule 2:



Share 4 cookies equally with 4 children. Each child gets 1 cookie.

$$4 \div 4 = 1$$

Rule 1: Any number divided by 1 equals that number.

Rule 2: Any number except 0 divided by itself equals 1.

Rule 3:

Share 4 cookies with 0 children.

There are 0 children. Dividing by 0 is not possible.

~~$4 \div 0 = 0$~~

Rule 4:

Share 0 cookies with 4 children. Each child gets 0 cookies.

$0 \div 4 = 0$

Rule 3: You cannot divide by 0.

Rule 4: Zero divided by any number equals 0.

Multiply and Divide Mentally

Teaching Point 1:

How can you multiply with **multiples of 10, 100 and 1 000**?

$3 \times 20 = 60$

Multiply: $3 \times 2 = 6$
Write **one zero** after 6.

$3 \times 200 = 600$

Multiply: $3 \times 2 = 6$
Write **two zeros** after 6.

$3 \times 2000 = 6000$

Multiply: $3 \times 2 = 6$
Write **three zeros** after 6.

$40 \times 30 = 1200$

The number of zeros in the product is the total number of zeros in the factors.

Activity 1:

Find the quotient.

1. $12 \div 12 =$

2. $0 \div 6 =$

3. $72 \div 1 =$

4. $8 \overline{)8}$

5. $1 \overline{)25}$

6. $9 \overline{)990}$

7. On an outing to the zoo, a teacher bought 24 snow cones for her 24 students.

- If the snow cone vendor gave all the snow cones to the teacher, how many snow cones will that 1 teacher have?
- If the snow cones are divided evenly among the students, how many snow cones will each student get?

Activity 1:

Use basic facts to solve.

1. $12 \times 10 =$

2. $13 \times 200 =$

3. $7 \times 60 =$

4. $900 \times 8 =$

5. $20 \times 60 =$

6. $40 \times 80 =$

7. $50 \times 60 =$

8. $120 \times 40 =$

9. $110 \times 30 =$

- Without calculating, tell which has the greatest product, 40×80 or 200×6 .
- A ticket to the zoo is \$50. How much money would 20 tickets cost?

12. Amanda jogs for 120 minutes each day. How many minutes will she jog in 10 days?

Teaching Point 2:

Use **compensation** to multiply mentally.

Find 398×4 .

400 is close to 398.

Multiply 400×4 and adjust the answer.

$$400 \times 4 = 1\ 600$$

$$398 + 2 = 400$$

$$2 \times 4 = 8$$

Adjust the answer by **subtracting** 8.

$$1\ 600 - 8 = 1\ 592$$

Find 306×5 .

300 is close to 306.

Multiply 300×5 and adjust the answer.

$$300 \times 5 = 1\ 500$$

$$306 - 6 = 300$$

$$6 \times 5 = 30$$

Adjust the answer by **adding** 30.

$$1\ 500 + 30 = 1\ 530$$

11. Three friends are going to Tobago for Easter. The cost of a plane ticket is \$395. How much will the trip cost for the three friends?

12. A water bottle holds 308 ml of water. How much water would 8 such water bottles hold?

Teaching Point 3:

Divide mentally.

$$60 \div 3 = 20$$

$$6 \text{ tens} \div 3 = 2 \text{ tens or } 20$$

$$600 \div 3 = 200$$

$$6 \text{ hundreds} \div 3 = 2 \text{ hundreds or } 200$$

$$6\ 000 \div 3 = 2\ 000$$

$$6 \text{ thousands} \div 3 = 2 \text{ thousands or } 2\ 000$$

When dividing numbers that end in zero, use basic division facts and patterns to help divide mentally.

Activity 2:

Use compensation to solve mentally.

1. $22 \times 5 =$

2. $199 \times 6 =$

3. $295 \times 7 =$

4. $998 \times 8 =$

5. $144 \times 5 =$

6. $8 \times 15 =$

7. $304 \times 3 =$

8. $6 \times 38 =$

9. $156 \times 7 =$

10. A baker bakes 104 cookies every hour. How many cookies are baked in 6 hours?

Activity 3:

Use basic facts to divide mentally.

1. $12 \div 6 =$

$$120 \div 6 =$$

$$1\ 200 \div 6 =$$

2. $28 \div 7 =$

$$280 \div 7 =$$

$$2\ 800 \div 7 =$$

3. $40 \div 8 =$

$$400 \div 8 =$$

$$4\ 000 \div 8 =$$

4. $72 \div 9 =$

$$720 \div 9 =$$

$$7\ 200 \div 9 =$$

5. $840 \div 7 =$

6. $8\ 100 \div 9 =$

7. $8\ 100 \div 6 =$

8. $3\ 200 \div 4 =$

9. $480 \div 8 =$

10. $270 \div 3 =$

11. $1\ 200 \div 2 =$

12. $2\ 500 \div 5 =$

Questions 13 and 14 are based on the table below.

Food Items	Total Amount in Sales
Hot Dogs	\$900
Pop corn	\$600
Cakes	\$810
Water	\$4 200

13. One bottle of water was sold for \$6. How many bottles of water were sold?
14. A bag of pop corn cost \$5 and a hot dog cost \$9. Which of the two items more persons bought?
15. There are 7 days in one week. How many weeks in 350 days?

Estimate Products

Teaching Point 1:

Alan collected 265 empty bottles. He can sell each bottle for \$2. How much money can he earn from the bottles he collected?

Find the **product**. Use **estimation** to check if the answer is reasonable.

1. **Multiply:** $265 \times 2 =$

One way to Multiply - Draw an **array**.

$$(200 \times 2) + (60 \times 2) + (5 \times 2)$$

$$400 + 120 + 10 = 530$$

Another Way to Multiply

Multiply: 5 ones $\times 2 = 10$ ones
Regroup: 1 ten 0 ones
Multiply: 6 ten $\times 2 = 12$ tens
Add extra ten: $12 + 1 = 13$ tens
Regroup: 1 hundred 3 tens
Multiply: 2 hundreds $\times 2 = 4$ hundreds
Add extra hundred: $4 + 1 = 5$ hundreds

2. Use **rounding** to **estimate**.

Round to the nearest hundred

$265 \times 2 =$



$300 \times 2 = 600$

The **estimated product** is 600.

The answer 530 is reasonable.

Use **front-end estimation**.

Multiply the digit with the greatest place value.

$265 \times 2 =$



$200 \times 2 = 400$

The **estimated product** is 400.

The answer 530 is reasonable.

Activity 1:

Find the product. Estimate to check if answer is reasonable.

1. $346 \times 7 =$
 ↓ Round 346
 $___ \times 7 = ___$

2. $1\ 006 \times 5 =$
 ↓ Round 1 006
 $___ \times 5 = ___$

3. $671 \times 9 =$ ↓ Round 671 ___ $\times 9 =$ ___	4. $812 \times 6 =$ ↓ Round 812 ___ $\times 6 =$ ___
5. $505 \times 8 =$ ↓ Round 505 ___ $\times 8 =$ ___	6. $129 \times 4 =$ ↓ Round 129 ___ $\times 4 =$ ___
7. $613 \times 3 =$ ↓ Round 613 ___ $\times 3 =$ ___	8. $398 \times 2 =$ ↓ Round 398 ___ $\times 2 =$ ___
9. $940 \times 7 =$ ↓ Round 940 ___ $\times 7 =$ ___	10. $762 \times 6 =$ ↓ Round 762 ___ $\times 6 =$ ___
11. $\$315 \times 5 =$ ↓ Round $\$315$ ___ $\times 5 =$ ___	12. $2\ 209 \times 4 =$ ↓ Round 2 209 ___ $\times 4 =$ ___
13. $1\ 473 \times 2 =$ ↓ Round 1 473 ___ $\times 2 =$ ___	14. $478 \times 8 =$ ↓ Round 478 ___ $\times 8 =$ ___

- 15.** Rhys wants to buy pants that cost \$195 each. If he has \$500, can he buy three pants?
- 16.** Jerrel's school has 238 students. Mia's school has four times as many students. How many students are in Mia's school?
- 17.** Mr. Khan earns \$1 150 each week. How much will he earn in 8 weeks?
- 18.** A furniture factory makes 234 chairs in one month. Estimate how many chairs can be made in 6 months.
- 19.** It costs a restaurant \$9 to make a burger. About how much will it cost to make 182 burgers?

- 20.** A car rental service rents cars at the rates in the table below.

Car Rental Rates	
Rental Rates	Price
Daily	\$125
3 days	\$356
Monthly	\$3 000

The rate for 7 days is \$784. Estimate how much money you save with a 7 day package instead of using the daily rate for 7 days.

- 21.** The distance between Harry's home and the school is 794 metres. About how many metres would Harry walk from home to school and back in 3 days?
- 22.** A school hallway has 78 rows of tiles. Each row has 9 tiles. How many tiles are in the hallway?
- 23.** Su Ling is buying three story books that cost \$45 each. The tax on each book is \$5. What is the total cost?
- 24.** Sharon works 178 hours each month. How many hours does she work in 10 months?
- 25.** Eight hundred and thirty-five persons bought tickets to attend a concert. The concert hall has 28 rows of chairs with 30 chairs in each row. Estimate whether there will be enough chairs for each person.
- 26.** Mother estimates that she will pay \$90 for a bread, a chicken, a pack of sugar and a tin of peas. If a bread costs \$16, a chicken costs \$41 and a pack of sugar costs \$19, what is the least possible price a tin of peas will cost?

Teaching Point 2:

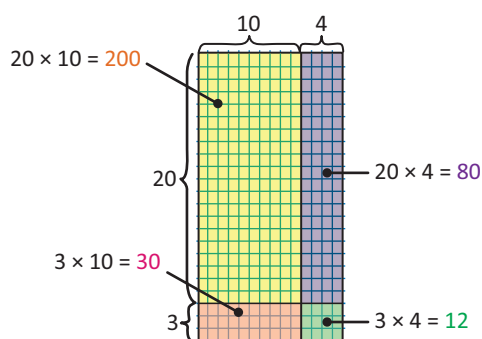
It costs a roti shop \$14 to make one chicken roti. About how much will it cost to make 23 rotis?

- Find the **product**. Use **estimation** to check if answer is reasonable.

1. **Multiply:** $23 \times 14 =$

One way to Multiply - Draw an **area model**.

Separate each factor into tens and ones.



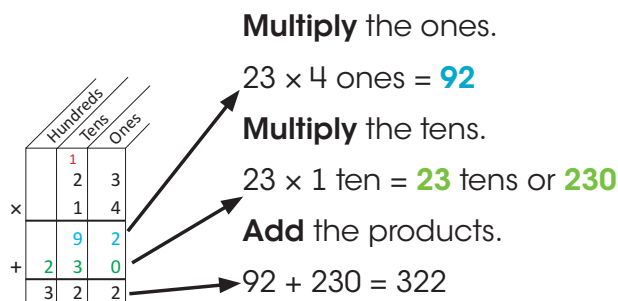
Add the products.

$$(20 \times 10) + (3 \times 10) + (20 \times 4) + (3 \times 4) =$$

$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$

$$\$200 + \$30 + \$80 + \$12 = \$322$$

Another Way to Multiply



2. **Estimate** to check if your answer is reasonable.

Use **rounding** to estimate.

$$\text{Estimate } 23 \times 14 =$$

Round both factors

$$23 \times 14 =$$

$$20 \times 14 = 280$$

The **estimated** cost in \$280.

The answer \$322 is **reasonable**.

Use **compatible numbers** to estimate.

$$23 \times 14 =$$

$$25 \times 10 = 250$$

The **estimated** cost in \$250.

The answer \$322 is **reasonable**.

Activity 2:

Find the product. Estimate to check if the answer is reasonable.

1. $48 \times 19 =$

2. $72 \times 25 =$

3. $69 \times 40 =$

4. $55 \times 37 =$

5. $114 \times 15 =$

6. $370 \times 91 =$

7. $456 \times 24 =$

8. $309 \times 38 =$

9. $815 \times 42 =$

10. $1370 \times 14 =$

11. $1652 \times 23 =$

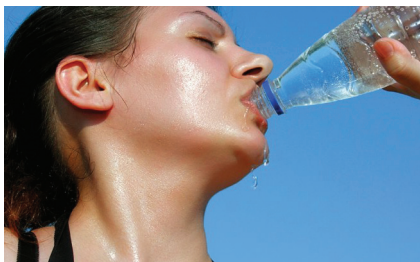
12. $2829 \times 42 =$

13. $82 \times 67 =$ 14. $601 \times 48 =$

15. $389 \times 75 =$ 16. $871 \times 31 =$

17. $2\,351 \times 22 =$ 18. $4\,159 \times 69 =$

19. Jelani spends \$125 on his cell phone each month. How much does he spend in two years?
20. A packet of paper has 500 sheets. How many sheets of paper are in 24 packets?



21. Maria drinks 2 450 ml of water each day. How much water will she drink in a month of 31 days?
22. Mr. Johnson gives each of his 32 students 12 minutes to present a project report to the class. How many minutes will it take for all of his students to present their reports?
23. A furniture store orders 32 chairs. Each chair costs \$2 159. What will be the total cost for the chairs?



24. Twenty-eight students took the plane to go to Tobago. Each plane ticket costs \$345. What was the total cost of the tickets?
25. A tile layer covers a rectangular floor with 32 rows of tiles. In each row he lays 296 small tiles. What is the total number of tiles he used to cover the floor?

Divide by 2-Digit Divisors

Teaching Point 1:

How can I estimate quotients?

A vendor has 3 248 pimento peppers. She wants to put them in bags of 16 to sell. About how many bags can she make?

1. **Estimate:** $3\,248 \div 16 =$

a) Use compatible numbers.

$3\,248 \div 16 =$



$3\,200 \div 16 = \mathbf{200}$

Change 3 248 to 3 200 because 32 and 16 are compatible numbers. Divide mentally.

b) Use multiplication.

$2 \times 16 = 32$, so $\mathbf{200} \times 16 = 3\,200$

c) Use rounding and compatible numbers.

Round the dividend to the nearest thousand.

$\mathbf{3\,248} \div 16 =$



$\mathbf{3\,000} \div 16 =$

Change the divisor to a **compatible number** with 3 000. Divide mentally.

$3\,248 \div \mathbf{16} =$



$3\,000 \div \mathbf{15} = \mathbf{200}$

She can make **approximately** 200 bags

Activity 1:

Estimate to solve.

1. $336 \div 4 =$
 $\downarrow$ Estimate
 $___ \div 4 = ___$

2. $246 \div 6 =$
 $\downarrow$ Estimate
 $___ \div 6 = ___$

3. $1\ 784 \div 8 =$
 $\downarrow$ Estimate
 $___ \div 8 = ___$

4. $2\ 970 \div 9 =$
 $\downarrow$ Estimate
 $___ \div 9 = ___$

5. $780 \div 13 =$
 $\downarrow$ Estimate
 $___ \div 13 = ___$

6. $210 \div 42 =$
 $\downarrow$ Estimate
 $___ \div 42 = ___$

7. $540 \div 15 =$
 $\downarrow$ Estimate
 $___ \div 15 = ___$

8. $682 \div 62 =$
 $\downarrow$ Estimate
 $___ \div 62 = ___$

9. $4\ 466 \div 22 =$
 $\downarrow$ Estimate
 $___ \div 22 = ___$

10. $4\ 968 \div 23 =$
 $\downarrow$ Estimate
 $___ \div 23 = ___$

11. A bag of cereal contains 1 984 grams. If there are 16 servings, about how many grams are there in one serving.
12. A bakery puts 12 hops in a bag for sale. If it bakes 504 hops, how many bags does the bakery need?
13. The 504 students and teachers of Maracas Primary went on a field trip by bus. If each bus hold 42 persons, how many buses did they use?
14. A security guard is paid at a rate \$15 an hour. If at the end of the week his pay is \$1050, how many hours did he work?
15. A farmer planted 2 996 tomato plants. There were 14 tomato plants on each bed. How many tomato beds did he plant?

16. Mrs. Branch paid \$720 for 15 shirts. About how much money did she pay for each shirt?
17. A gardener has 384 lettuce seedlings to plant. If he plants 16 seedlings on each bed, about how many beds will he need?
18. A case of soft drinks contains 24 cans. About how many cases can be filled with 1 248 cans?

Teaching Point 2:

How can you divide by 2-digit divisors?

3 394 pepper are packed into bags of 16. How many bags can be made?

2. **Divide.**

$$\begin{array}{r}
 212 \text{ r}2 \\
 16 \overline{) 3394} \\
 \underline{-32} \\
 19 \\
 \underline{-16} \\
 34 \\
 \underline{-32} \\
 02
 \end{array}$$

Divide the hundreds: $33 \div 16 = 2$

Multiply: $16 \times 2 = 32$

Subtract: $33 - 32 = 1$

Compare: 1 is less than 16

Divide the tens:

Bring down the tens: 9

Divide: $19 \div 16 = 1$

Multiply: $16 \times 1 = 16$

Subtract: $19 - 16 = 3$

Compare: 3 is less than 16

Divide the ones:

Bring down the ones: 4

Divide: $34 \div 16 = 2$

Multiply: $16 \times 2 = 32$

Subtract: $34 - 32 = 2$

Compare: 2 is less than 16

3. Use the **inverse** to **check**.

$$212 \times 16 = 3\ 392 \rightarrow 3\ 392 + 2 = 3\ 394$$

212 bags can be made. 2 peppers will remain.

Activity 2:

Copy and complete each of the following.

1. $12 \overline{)672}$	2. $15 \overline{)375}$
3. $14 \overline{)208}$	4. $19 \overline{)577}$
5. $32 \overline{)2592}$	6. $26 \overline{)5521}$
7. $48 \overline{)4656}$	8. $45 \overline{)7670}$
9. $36 \overline{)7248}$	10. $17 \overline{)1241}$
11. $33 \overline{)6765}$	12. $24 \overline{)4809}$
13. $21 \overline{)6405}$	14. $27 \overline{)8154}$
15. $31 \overline{)2139}$	16. $36 \overline{)9586}$
17. $13 \overline{)1243}$	18. $18 \overline{)1656}$
19. $19 \overline{)3610}$	20. $20 \overline{)2890}$

Interpret Remainders

Teaching Point 1:

How do I interpret the remainder?

Write the **remainder** as **fraction**.

11 cookies are shared equally among 4 children. How many cookies would each child get?

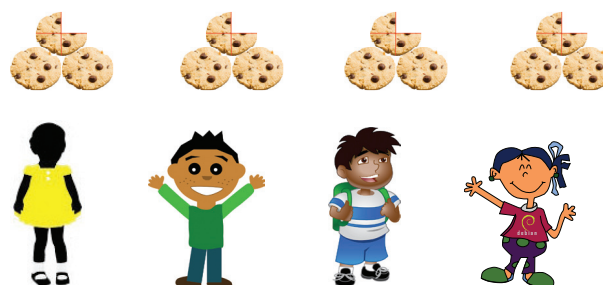
Divide. $11 \div 4 =$

$$\begin{array}{r} 2 \text{ r} 3 \\ 4 \overline{)11} \\ - 8 \\ \hline 3 \end{array}$$

The remainder represents **3 cookies left over**, which can also be divided into **4 equal parts** and written as a **fraction**.

$$\frac{\text{remainder}}{\text{divisor}} = \frac{3}{4}$$

Each child will get $2\frac{3}{4}$ cookies.



Activity 1:

Interpret remainders to solve.

1. A jug holds 850 ml of juice. If the juice is equally shared among 6 children. How much juice would each child get?
2. Mummy made 2 562 ml soup for her family of 5. If each person gets the same amount of soup, how much soup will each person get?
3. Martin has a 189 cm length of string. He wants to cut the string into 8 equal pieces. What will be the length of each piece?
4. Nine children shared 60 cookies equally among themselves. How many cookies did each child get?

5. Mr. Lee has a 650 cm roll of crepe paper. He wants to make 15 streamers to decorate for the class party. How long will each streamer be if he cuts the roll into equal pieces?

6. Miss Baptiste has 195 cm of ribbon to make bows for the 10 players on the netball team. How much ribbon can she use for each bow if she cuts the ribbon into equal pieces?



7. A factory cuts a piece of fabric 165 metres long into 14 equal pieces to make tablecloths. What will be the length of each tablecloth?

Teaching Point 2:

How do I interpret the remainder?

The **remainder** causes the answer to be **rounded up**.

11 children are going on boat trip. A boat can carry only 4 children at a time. How many boats are needed for all the children?

Divide. $11 \div 4 =$

$$\begin{array}{r} 2 \text{ r}3 \\ 4 \overline{) 11} \\ \underline{- 8} \\ 3 \end{array}$$

The remainder represents **3 children left over**. To carry all the children, they will need **one more** boat.

Add **1** to the quotient. **Three** boats will be needed.



Activity 2:

Interpret remainders to solve.

- Mrs. Martin has 139 muffins to pack into boxes. If each box holds 4 muffins. How many boxes will she need?
- How many boards 6 metres long are needed for a 189 metres fence?
- Water stations are placed every 40 metres in a 5 000 metres race. How many water stations are needed?
- Miss Sheila is transporting 375 chairs in her van. Her van can only hold 68 chairs at one time. How many trips will she have to make to carry all the chairs?



- Alisha wants to pack 89 books into boxes. Each box can hold 13 books. What is the least number of boxes will she need to pack all the books?

Teaching Point 3:

How do I interpret the remainder?

The **remainder** is not part of the question.

A rope is 22 metres long. How many 3 metres jump ropes can be made?

Divide. $22 \div 3 =$

$$\begin{array}{r} 7 \text{ r}1 \\ 3 \overline{)22} \\ - 21 \\ \hline 1 \end{array}$$

The **quotient** of **7** represents the number of jump ropes that can be made.

The remainder of **1 metre** is **discarded** because it is not needed to answer the question.

Activity 3:

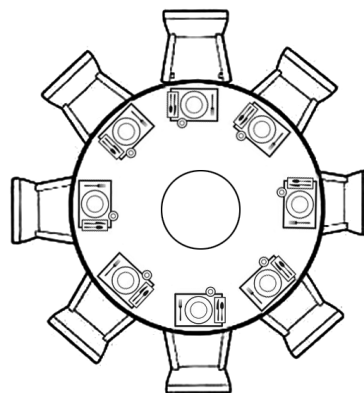
Interpret remainders to solve.

- Miss Ann has 486 grams of ice-cream. If she shares all the ice-cream and gives each child 72 grams. How many children will get equal amounts?
- Mr. Khan, a tour guide at the Caroni Swamp can take no more than 8 people at a time on a tour. If 135 persons came to do the tour, how many full tour groups of exactly 8 will Mr. Khan have?



- How many of the footballs above can you buy with \$873?

- Mrs. Peters is buying scrapbooks for a class project. Scrapbooks cost \$20 each. How many scrapbooks can she buy with \$350?
- Three metres of fabric will be cut into pieces so that each piece is 24 cm long. How many pieces can be cut?
- There are 6 toilet paper rolls in each package. If there are 365 rolls of toilet paper, how many packages can be made?



- At a wedding reception there are 129 guests seated at tables. Each table seats 8 guests. How many full tables are there?
- Maria has 46 metres of fabric to make tablecloths. How many tablecloths can be made if she uses 8 metres for each tablecloth?
- There are 652 copy books to be shared equally among 25 children. How many books will each child get?
- On the opening day of a pastry shop every 15th customer was given a free drink. If 389 customers visited the shop on that day, how many free drinks were given out?

Teaching Point 4:

How do I interpret the remainder?

The **remainder** is the only part needed to answer the question.

22 students have signed up to be part of a relay team. If each relay team can have 4 runners, how many students will not make a relay team?

Divide. $22 \div 4 =$

$$\begin{array}{r} 5 \text{ r}2 \\ 4 \overline{) 22} \\ - 20 \\ \hline 2 \end{array}$$

The **quotient** of **5** represents the number of relay teams.

The **remainder** of **2** represents the number of students that are not on a relay team.

2 students will not make the relay team.

Activity 4:

Interpret remainders to solve.

- 248 persons have signed up to play football. Each football team has 18 persons. How many persons will not be in a team?
- Keron has \$500. He used the money to buy shirts that costs \$45 each. How much money had he left?
- A vendor has 448 limes to sell at the market. He puts them in bags with 6 limes in each bag. How many limes will not be in equal bags?
- At an exhibition tour guides take around groups of 7 persons at a time to view the exhibits. If 80 persons arrive at the same time, how many of them will be in the last tour?

- Isaiah is at the arcade. He has 65 tokens to play arcade games. It costs 7 tokens to play a game. If he plays as many games as he can, how many tokens will he have left?

Chapter Review

Find the unknown number.

- $12 \times (2 \times \square) = 240$
- $9 \times \square = 8 \times 9$
- $123 \div \square = 1$
- $\square \div 13 = 0$

Solve mentally.

- $120 \times 90 =$
- $1\ 080 \div 9 =$
- What is the largest number which when multiplied by 20 is less than 156?
- One pack of biscuits costs \$8. How many packs of biscuits can you buy with \$640?
- Carla drinks 295 ml of juice each day. How much juice will she drink in 7 days?

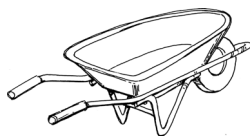
Solve each problem.

$$\begin{array}{r} 1\ 487 \\ \times 19 \\ \hline \\ \hline \end{array}$$

$$11. 282 \div 22 =$$

$$12. 1\ 202 \div 9 =$$

13. What is the dividend in a division problem when the quotient is 15, the divisor is 8 and there is a remainder of 5?
14. A bus can hold 48 persons. If 245 persons are going on the field trip, how many buses will be needed?
15. Mr. Martin works for \$25 an hour. If he works for 8 hours each day and 5 days a week, how much money will he earn after 4 weeks?
16. A school which has 24 classrooms allows 35 students to be seated in each classroom. How many pupils can have seats in the school?



17. A gardener has to move 2 150 kilograms of dirt to his garden. He can carry 49 kilograms of dirt in his wheelbarrow. How many trips will he need to make with the wheelbarrow?
18. If a case of water costs \$23, what will be the cost of 42 cases of water?
19. An auditorium contains 48 rows of seats. If each row has 40 seats. How many seats are in the auditorium?
20. A bakery has 197 cupcakes to be packed into boxes of 12. The extra cupcakes are for the workers. How many cupcakes will the workers get?
21. Karen earns \$789 per week. How much money will she earn in 16 weeks?
22. A photocopying machine prints 36 copies in 1 minute. How long does it take the machine to print 1 260 copies?

23. Altogether there are 264 sticks of chalk in a box. There are 10 times as many white sticks of chalk as coloured sticks. How many of each type of chalk are in the box?



24. A fruit stall buys 30 boxes of 48 apples. They pack the apples into bags of 6 and sell each bag for \$15. How much money do they collect after selling all the apples?
25. Mr. James fills his 105 litre fuel tanks at \$4 per litre. How much money does he need to pay to fill 10 such fuel tanks?
26. Leanna is 2 years old. If Allyah is 6 times more than twice Leanna's age, how old is Allyah?
27. A school has 32 classrooms with 25 tables. If each table can seat 2 students, how many students can be accommodated at the school?



28. Mark sold 27 pineapples and Dianne sold three times as many as Mark. How much money did Dianne collect if each pineapples cost \$20?
29. A 256 kg bag of peas are packaged in 16 kg packets and sold at \$23 a packet. How much money will be collected after all the packets are sold?