

Important Concepts . . .

Preview Review



Mathematics

Grade 5

W1 - Lesson 5: Multiplication

Important Concepts of Grade 5 Mathematics

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Materials Required

Protractor
Ruler
Calculator

A textbook is not
needed.

This is a stand-alone
course.

Mathematics Grade 5

Version 5

Preview/Review W1 - Lesson 5

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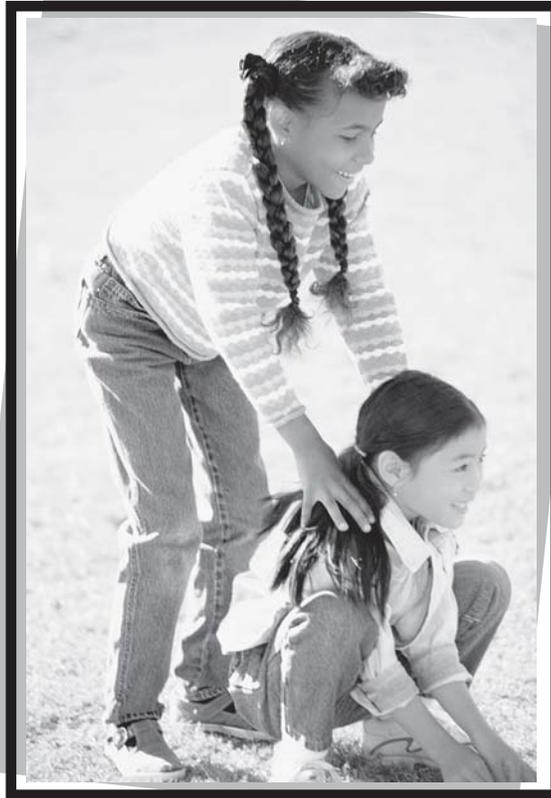
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Preview/Review Concepts for Grade Five Mathematics



*W1 - Lesson 5:
Multiplication*

OBJECTIVES

By the end of this lesson, you should

- multiply by 10, 100, 1000, etc.
- determine multiples and factors
- understand prime and composite numbers
- use factor trees
- multiply with decimal numbers

Glossary of Terms

Composite Number: A whole number that is greater than 1 and has more than two factors is a composite number. It is the opposite of a prime number.

Example: 8 is a composite number. It has 4 factors: 1, 2, 4, and 8.

$$1 \times 2 \times 4 = 8$$

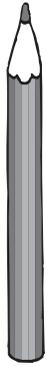
Factors: The numbers multiplied in a multiplication expression are factors.

Example: $4 \times 7 = 28$

(Both 4 and 7 are factors; 28 is the product.)

Multiple: Multiples are found by multiplying the number and another whole number.

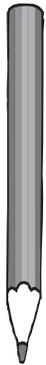
Example: The multiples of 5 are 5, 10, 15, 20, 25, etc.



Prime Number:

A prime number is a whole number that is greater than 1 and has only two factors, the number one, and itself. (It is the opposite of a Composite Number.)

Example: 7 is a prime number. It has two factors, 7 and 1.

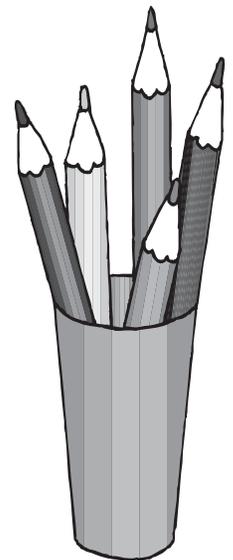
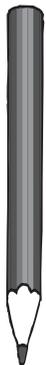


Product:

The answer in multiplication is the product. Each multiplication question has factors multiplied to find the product.

Example: $6 \times 9 = 54$
(54 is the product; both 6 and 9 are factors.)

$$\begin{array}{ccc}
 6 & \times & 9 & = & 54 \\
 \downarrow & & \downarrow & & \downarrow \\
 \text{Factors} & & & & \text{Product}
 \end{array}$$



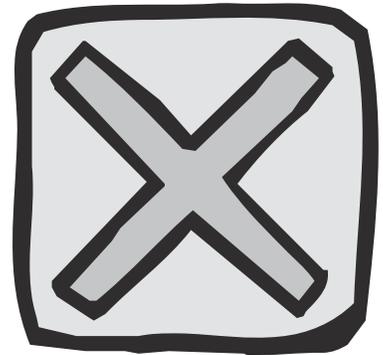
W1 - Lesson 5: Multiplication

Concepts:

- Mental Math
- Prime Numbers and Composite Numbers
- Number Factors
- 3-Digit by 2-Digit Multiplication
- Multiplication with Decimals

Mental Math

Complete as many as you can in **one minute**.
Begin with the ones you know.



$0 \times 7 = \underline{\quad\quad} \quad 1 \times 4 = \underline{\quad\quad} \quad 7 \times 3 = \underline{\quad\quad} \quad 1 \times 6 = \underline{\quad\quad} \quad 3 \times 1 = \underline{\quad\quad}$

$8 \times 8 = \underline{\quad\quad} \quad 5 \times 2 = \underline{\quad\quad} \quad 3 \times 7 = \underline{\quad\quad} \quad 8 \times 2 = \underline{\quad\quad} \quad 4 \times 4 = \underline{\quad\quad}$

$9 \times 8 = \underline{\quad\quad} \quad 4 \times 2 = \underline{\quad\quad} \quad 1 \times 3 = \underline{\quad\quad} \quad 5 \times 6 = \underline{\quad\quad} \quad 9 \times 6 = \underline{\quad\quad}$

$4 \times 5 = \underline{\quad\quad} \quad 5 \times 7 = \underline{\quad\quad} \quad 4 \times 2 = \underline{\quad\quad} \quad 2 \times 1 = \underline{\quad\quad} \quad 2 \times 2 = \underline{\quad\quad}$

$9 \times 2 = \underline{\quad\quad} \quad 9 \times 3 = \underline{\quad\quad} \quad 3 \times 6 = \underline{\quad\quad} \quad 3 \times 8 = \underline{\quad\quad} \quad 8 \times 4 = \underline{\quad\quad}$

Multiples of 10, 100 and 1 000

To multiply a number by 10, just add a zero to the number.

To multiply a number by 100, just add two zeros.

To multiply a number by 1 000, just add three zeros.

Example: $14 \times 10 = 140$ (add one zero)
 $229 \times 100 = 22\,900$ (add two zeros)
 $384 \times 1\,000 = 384\,000$ (add three zeros)

Try the following.

$65 \times 100 = \underline{\hspace{2cm}}$

$10 \times 13 = \underline{\hspace{2cm}}$

$984 \times 10 = \underline{\hspace{2cm}}$

$94 \times 100 = \underline{\hspace{2cm}}$

$12 \times 10 = \underline{\hspace{2cm}}$

$981 \times 1\,000 = \underline{\hspace{2cm}}$

$100 \times 7 = \underline{\hspace{2cm}}$

$81 \times 1\,000 = \underline{\hspace{2cm}}$

$10 \times 432 = \underline{\hspace{2cm}}$

$1\,000 \times 35 = \underline{\hspace{2cm}}$

$1\,000 \times 4 = \underline{\hspace{2cm}}$

$47 \times 100 = \underline{\hspace{2cm}}$

$8 \times 4 \times 100 = \underline{\hspace{2cm}}$

$11 \times 2 \times 100 = \underline{\hspace{2cm}}$

$3 \times 30 \times 10 = \underline{\hspace{2cm}}$

50+100+250+500+1000
50+100+250+500+1000

List the first six multiples of 7 _____

List the first six multiples of 9 _____

Prime Numbers and Composite Numbers

A **prime number** is a whole number that is greater than 1 and has only two factors, the number 1, and itself. It is the opposite of a composite number.

Example: 5 is a prime number: it has two factors, 5 and 1.

A **composite number** is a whole number that is greater than 1 and has more than two factors. It is the opposite of a prime number.

Example: 8 is a composite number; it has 4 factors, 1, 2, 4, and 8.
($1 \times 8 = 8$ and $2 \times 4 = 8$)

Example: 12 is a composite number: it has 6 factors, 1, 2, 3, 4, 6 and 12
($1 \times 12 = 12$ and $3 \times 4 = 12$ and $2 \times 6 = 12$)

1. For each number write **P** if it is prime, **C** if it is a composite number.

a. 8 ___ b. 9 ___ c. 3 ___ d. 7 ___ e. 5 ___ f. 12 ___ g. 16 ___

h. 19 ___ i. 32 ___ j. 11 ___ k. 14 ___ l. 6 ___ m. 9 ___ n. 13 ___

Hint: The only even number that is a prime number is 2, the rest are composite numbers.

2. Tell whether each underlined number is an example of a prime number or a composite number.

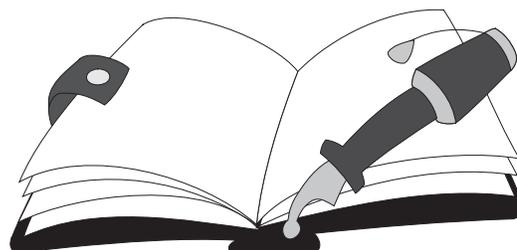
Write **P** for prime and **C** for composite.

a. 9 × 5 = 45 ___ b. 5 × 1 = 5 ___ c. 2 × 3 = 6 ___ d. 5 × 7 = 35 ___

e. 3 × 6 = 18 ___ f. 4 × 4 = 16 ___ g. 6 × 7 = 42 ___ h. 1 × 2 = 2 ___

3. Are there more *odd* prime numbers or more *even* prime numbers. Explain your answer.

4. How many factors can you find for the number 36? Show your work.



Number Factors

Factors are the numbers that are multiplied in a multiplication expression.

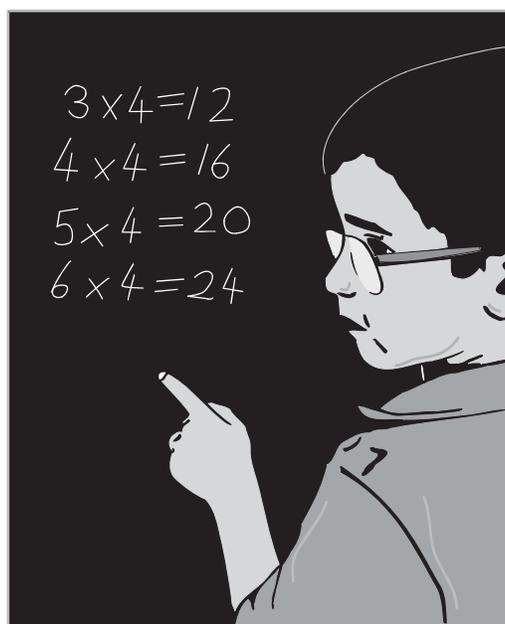
$4 \times 7 = 28$ **(Both 4 and 7 are factors.) (28 is the product.)**

How can you tell if 9 is a factor of 36? Divide! Because $36 \div 9 = 4$ and 4 is a whole number, we know that 9 is a factor of 36.

Show whether each of the following are factors by writing *yes* or *no* in the blanks provided.

| Number | Factor | Yes or No |
|--------|--------|-----------|
| 16 | 7 | |
| 81 | 9 | |
| 46 | 2 | |
| 44 | 8 | |
| 31 | 3 | |

| Number | Factor | Yes or No |
|--------|--------|-----------|
| 35 | 5 | |
| 24 | 9 | |
| 52 | 4 | |
| 55 | 11 | |
| 19 | 2 | |



Factor Trees

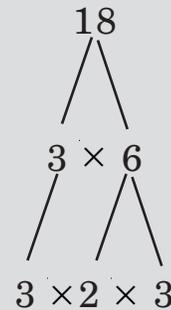
Factor trees are useful for showing all factors as prime numbers.

A factor tree will help you find how many prime factors a number has.

How many prime factors does the number 18 have?

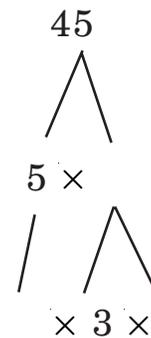
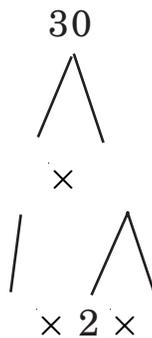
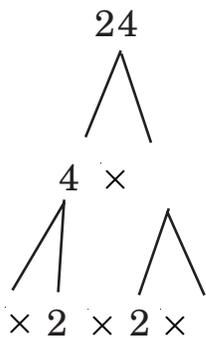
1. Choose two factors that can be multiplied together to make 18. For example: 3×6
2. Because 3 is a prime number, we just move the 3 down. 6 is not a prime number, so we need to break it into factors.
3. Write the prime number factors in an equation.

Example: $18 = 3 \times 2 \times 3$



So $18 = 3 \times 2 \times 3$
all prime numbers

Find the missing factors. Beneath each factor tree write the prime number factors in an equation.



3-Digit by 2-Digit Multiplication

Example: 32×27

1. Multiply (32×7)

$$\begin{array}{r} 32 \\ \times 27 \\ \hline 224 \end{array}$$

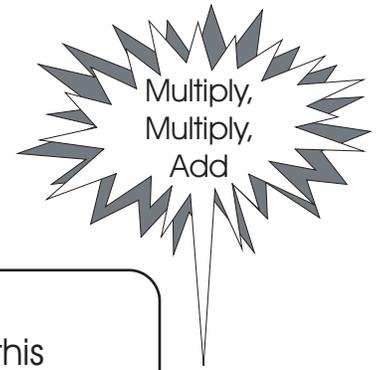
2. Multiply (32×20)

$$\begin{array}{r} 32 \\ \times 27 \\ \hline 224 \\ 640 \end{array}$$

3. Add ($224 + 640$)

$$\begin{array}{r} 32 \\ \times 27 \\ \hline 224 \\ + 640 \\ \hline 864 \end{array}$$

The answer is 864!



The first digit on this line will always be a zero.

Try the following questions. Show all your work!

1.
$$\begin{array}{r} 34 \\ \times 24 \\ \hline 13\ \square \\ + \square 80 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 84 \\ \times 12 \\ \hline \square \square 8 \\ + 8 \square 0 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 22 \\ \times 57 \\ \hline 15\ \square \\ + 1^1 \square \square \square \\ \hline \end{array}$$

4.
$$\begin{array}{r} 26 \\ \times 35 \\ \hline \square \square 0 \\ + 78\ \square \\ \hline \end{array}$$

5.
$$\begin{array}{r} 14 \\ \times 46 \\ \hline \square \square 4 \\ + \square \square \square \\ \hline \end{array}$$

6.
$$\begin{array}{r} 38 \\ \times 16 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 22 \\ \times 46 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 11 \\ \times 29 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 24 \\ \times 27 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 55 \\ \times 48 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 65 \\ \times 10 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 34 \\ \times 17 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 52 \\ \times 30 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 27 \\ \times 27 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 21 \\ \times 74 \\ \hline \end{array}$$

Multiplication with Decimals

Multiplying with decimals is easy. It just requires one extra step.

1. Multiply
2. Multiply
3. Add
4. Count!

$$\begin{array}{r}
 6.409 \\
 \times 7.8 \\
 \hline
 51272 \\
 +448630 \\
 \hline
 49.9902
 \end{array}$$

3 decimal places from the right.

1 decimal place from the right.

Because there are 4 decimal places in the question, you need 4 decimal places in the answer.

Start on the right of the answer and move 4 places to the left then enter the decimal.

Rewrite the answers and show the decimal for the following.

- | | |
|-------------------------------------|---|
| 1. $3.2 \times 1.2 = 384$ _____ | 5. $144.8 \times 0.9 = 13032$ _____ |
| 2. $2.29 \times 1.5 = 3435$ _____ | 6. $3008.7 \times 1.64 = 4934268$ _____ |
| 3. $8.9 \times 0.98 = 8722$ _____ | 7. $290.6 \times 5.14 = 1493684$ _____ |
| 4. $0.074 \times 5.5 = 04070$ _____ | 8. $27.3 \times 1.5 = 4095$ _____ |

Find the answer to each of the following questions.

1.
$$\begin{array}{r}
 2.3 \\
 \times 5.4 \\
 \hline
 \end{array}$$

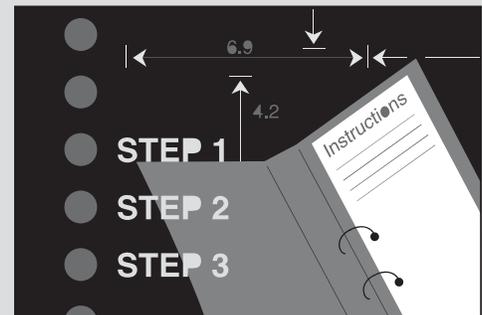
3.
$$\begin{array}{r}
 3.7 \\
 \times 4.5 \\
 \hline
 \end{array}$$

2.
$$\begin{array}{r}
 8.1 \\
 \times 2.8 \\
 \hline
 \end{array}$$

4.
$$\begin{array}{r}
 2.1 \\
 \times 8.4 \\
 \hline
 \end{array}$$

3-Step Problem-Solving Process

1. Write the problem in a number question.
2. Solve the problem. **Show your work.**
3. Write a sentence with the answer.



Tiny Town has one movie theatre. Each movie plays for 12 nights. If an average of 23 people go to every showing, how many people are expected to see the movie?

The Tiny Town theatre sells popcorn for \$2.75. If 15 people buy the popcorn, how much money will the theatre make if the profit on every bag of popcorn is \$2.25?

The Tiny Town theatre has 21 rows of seats with 14 seats per row.
How many seats are in the theatre?

Mark goes to the Tiny Town theatre two times a week through the summer holidays. If Mark spends \$7.50 per week for 8 weeks, how much money will Mark spend?

