


Concept: Products, Multiples, Factors

Name:


COMPUTER COMPONENT

Instructions: In  follow the **Content Menu** path:

Fractions > Products, Multiples, Factors

 Work through all Sub Lessons of the following Lessons **in order**:

- *The Multiplication Table – All*
- *Multiples*
- *Least Common Multiple*
- *Divisibility*
- *Factors*
- *Greatest Common Factor*
- *Venn Diagram... Factors*

 As you work through the computer exercises, make you will be prompted to make notes in your notebook/math journal.

NOTES

Carefully look the down the columns in the exercise *The Multiplication Table – Patterns*.

1. **Pattern Treasures:** Let your eyes explore the number patterns as they scan upper-left to lower- right and also from upper-right to lower-left.

List two patterns that you find. For each one, tell in your words what the pattern shows.

Pattern	'In Your Words'
1, 4, 9, 16, 25, 36, 49, 64, 81	<p><i>Answers will vary</i></p> <p>The difference between any two 'perfect squares' follows a pattern.</p> <p>1 4 9 16 25 36 49 64 81</p> <p>V V V V V V V V</p> <p>3 5 7 9 11 13 15 17</p> <p>(Hmm..)</p>
If a line were drawn from the upper-left corner to the lower-right corner, the numbers seem to be a mirror image on each side.	<p>Since the commutative property allows the order of the factors to be changed without losing equality, the 'mirror image' is generated. The number facts that need to be 'memorized' by students is divided in two.</p>

2. With the multiplication table, you are looking at ‘*skip-counting*’; something that you learned to do many years ago. You learned to count by 1’s first and then learned to count by 2’s and then 5’s.

Let’s try these:

1 ▶	1	2	3	4	5	6	7	8	9
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2 ▶	2	4	6	8	10	12	14	16	18
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5 ▶	5	10	15	20	25	30	35	40	45
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3. Try to use *skip-counting* to fill in the blanks of the following table. Work from the left column to the right and each time, start at the top row.

X	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

OFF COMPUTER EXERCISES

1. Now that you have practiced your patterns found in the multiplication table, let's try to put your ideas to work in a Problem Table.

(a) *In this table, you will need to find the missing factors that belong in the top row and the left column. Once you solve the puzzle, fill in any of the missing products.*

X	3	7	2	5	8
5	15	35	10	25	40
2	6	14	4	10	16
4	12	28	8	20	32
6	18	42	12	30	48
9	27	63	18	45	72

(b) *Now make your own problem and see if your 'elbow-partner can solve it. (Answers will vary)*

X					

2. The multiples of 5 are: 5, 10, 15...

Write the next 5 multiples in the sequence.

20, 25, 30, 35, 40

A multiple of 5 is the product of 5 and the natural number:

$$5 \times 1 = 5$$

$$5 \times 2 = 10$$

$$5 \times 3 = 15$$

$$5 \times 4 = 20$$

$$5 \times 5 = 25$$

$$5 \times 6 = 30$$

$$5 \times 7 = 35$$

$$5 \times 8 = 40$$

3. The multiples of 7 between 22 and 51 are:

28, 35, 42, 49

4. The first 6 multiples of 3 are...

3, 6, 9, 12, 15, 18

The first 6 multiples of 5 are...

5, 10, 15, 20, 25, 30

The LCM of 3 and 5 is **15**.

5. A Triathlon is a grueling sport that requires its athletes to participate in three disciplines in one race.

Rudy, who is an elite triathlete, trains for the swim every 4th day.

He trains for the cycling component every 3rd day.

Lastly, he trains for the running component every 8th day.

Use your superior knowledge of LCM's to demonstrate the day, which Rudy will train for all three events. (show all of your work below)

Swim- 4, 8, 12, 16, 20, **24**

Cycling- 3, 6, 9, 12, 15, 18, 21, **24**

Running- 8, 16, **24**

The LCM for 3, 4 and 8 is 24. ∴ Rudy will train for all three events every 24th day.

6. Based on your knowledge of 'Division Rules' ...

- Circle the numbers divisible by 2.
- Underline the numbers divisible by 3.

2678 555 2433 **836** 1117

7. If $96, 8\underline{\quad}8$ is divisible by 9, the missing digit is... 5

$$96, 858 \div 9 = 10, 762$$

8. Draw all rectangles that can contain 18 small squares.

$$18 \text{ rows and } 1 \text{ columns: } 18 \times 1 = 18$$

$$1 \text{ row and } 18 \text{ columns: } 1 \times 18 = 18$$

$$9 \text{ rows and } 2 \text{ columns: } 9 \times 2 = 18$$

$$2 \text{ rows and } 9 \text{ columns: } 2 \times 9 = 18$$

$$6 \text{ rows and } 3 \text{ columns: } 6 \times 3 = 18$$

$$3 \text{ rows and } 6 \text{ columns: } 3 \times 6 = 18$$

∴ 1, 2, 3, 6, 9, 18 are all factors of 18.

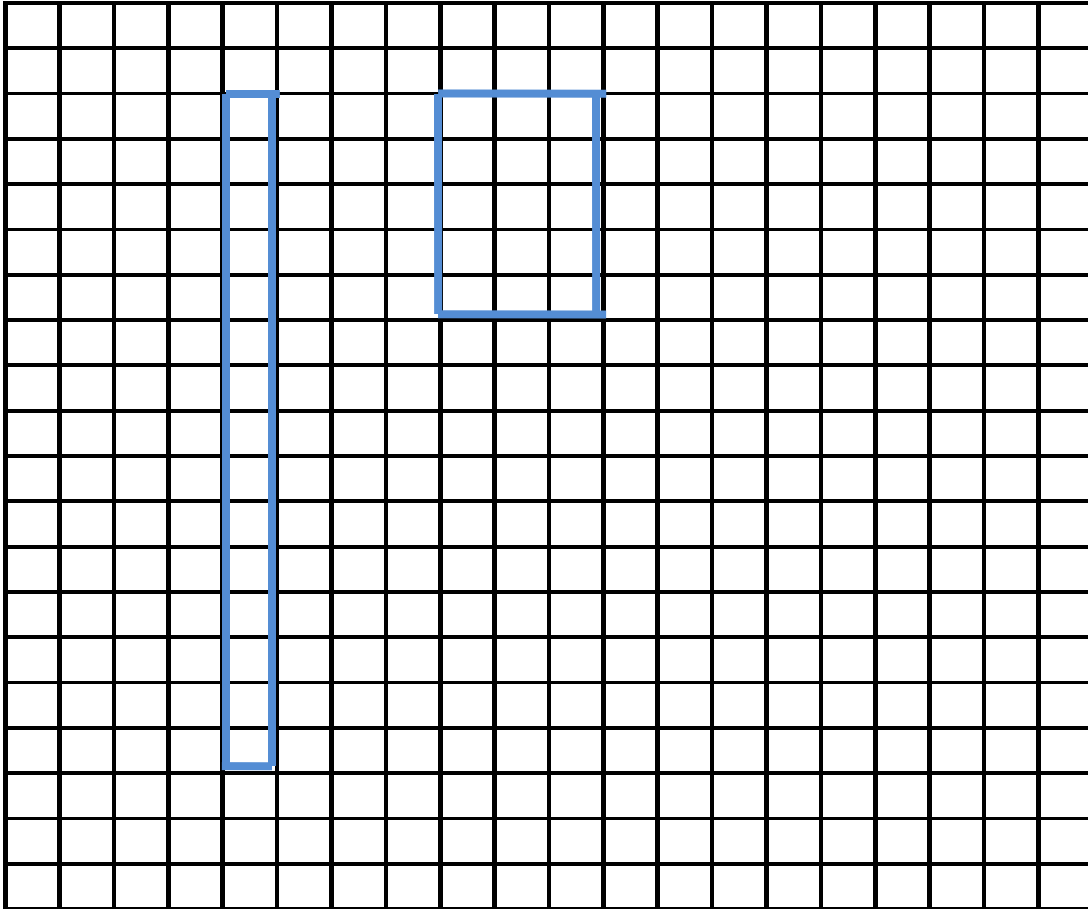
When a number has more than 2 factors, we say that it is a **composite** number.

9. When a number has only 2 factors, we say that it is a **prime** number.

Can you list all of the Prime numbers between 1- 25?

1, 2, 3, 5, 7, 11, 13, 17, 19, 23

10. Draw all rectangles containing 15 small squares.



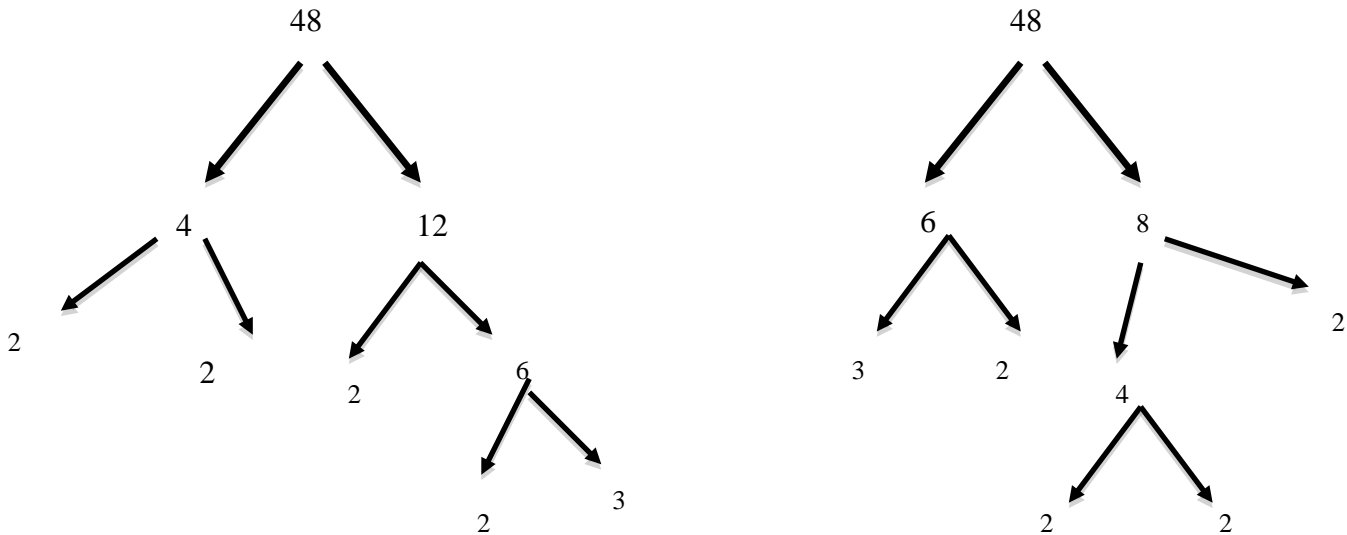
Is 15 a 'prime' or a 'composite' number?

How do you know? *15 is a composite number because it has more than itself and '1' as factors.*

11. Find the last “prime number year” before the year 2000. (Show all of your thinking)

1999 is the last prime number year before the year 2000. I used ‘guess and check for this.

12. Complete the factor trees below.



13. Can you find the *GCF* (Greatest Common Factor) for 36 and 27?

36- 1, 2, 3, 4, 6, 9, 12, 18, 36

27- 1, 3, 9, 27

‘9’ is the GCF for 36 and 27

14. Uncle Jack has a total of 27 quarters, 18 dimes and 45 nickels. He would like to have the same number, of each item, in each bag.

Can you show him how he may do this?

9 Bags- 3 quarters, 2 dimes and 5 nickels in each bag

OR

3 Bags- 9 quarters, 6 dimes, 15 nickels in each bag

15. You have been given the challenging task of organizing a shelf for a new cereal display. There are 36 boxes that must be placed in to equal rows.

How many different possible combinations can you come up with?

1 row of 36 boxes or 36 rows of 1 box

2 rows of 18 boxes or 18 rows of 2 boxes
 3 rows of 12 boxes or 12 rows of 3 boxes
 4 rows of 9 boxes or 9 rows of 4 boxes
 6 rows of 6 boxes

Which combination is the most visually appealing?
 (answers will vary)

NOTE: Pictures/Diagrams, numbers and words will all contribute to a more complete Response.

16. Use this 'Venn Diagram' to illustrate the *common* factors for 28 and 42

