# **Multiplication Comprehension Check**

1. Use your own words to describe and define multiplication.
2. How are addition and multiplication related?
3. Use the doubling strategy to solve the following problem: 8 x 4.
4. Describe how multiplication is the same as repeated addition of equal groups. Provide an example to support your answer.
5. What is skip counting? How does it relate to multiplication?
6. Use the skip counting strategy to solve the following problem: 4 x 9.
7. Use the strategy of addition solve the following problem: 3 x 19.

1. Tim was able to do 7 pullups at the playground. Tim’s older sister was able to do 9 times as many! How many pullups did she do? What strategy did you use and why?
2. Provide an example to illustrate why order does not matter when multiplying two numbers together. Use pictures, number sentences, and/or sentences to support your answer.
3. Who was Pythagoras and what was his claim to fame?

# **Multiplication Comprehension Check Answer Key**

1. Use your own words to describe and define multiplication.
   1. Multiplication is represented by the x symbol and can be used to quickly add up equal numbers of groups. Multiplication is the same as repeated addition, just more efficient.
2. How are addition and multiplication related?
   1. Addition and multiplication are related because they can be used to complete the same tasks. Multiplication can be seen as adding the same group together multiple times. This is often called repeated addition. For example, 5 x 3 = 15 can be thought of using addition: 3 + 3 + 3 + 3 + 3, which shows 5 groups of 3, or 15. Likewise, 3 x 5 = 15 can be thought of as 5 + 5 + 5, which shows 3 groups of 5, or 15.
3. Use the doubling strategy to solve the following problem: 8 x 4.
   1. Students’ answers will vary. Some might double 8 twice (8 x 2 = 16, 16 + 16 = 32), whereas others might double 4 three times (4 x 2 = 8, 8 x 2 = 16, 16 x 2 = 32). In addition, some students might recognize this problem as double 4 x 4, or double 16 = 32.
4. Describe how multiplication is the same as repeated addition of equal groups. Provide an example to support your answer.
   1. Multiplication is the same as repeated addition of equal groups. Many people think multiplication is a more efficient strategy. Repeated addition can be used to show the same value as multiplication. Students’ examples of repeated addition will vary.
5. What is skip counting? How does it relate to multiplication?
   1. Skip counting is a strategy by which you count by that number. For example, we can skip count by 5 to 30: 5, 10, 15, 20, 25, 30. Skip counting relates to multiplication because it demonstrates counting by groups.
6. Use the skip counting strategy to solve the following problem: 4 x 9.
   1. Students might choose to skip count by 4s (4, 8, 12, 16, 20, 24, 28, 32, 36) or by 9s (9, 18, 27, 36) to find the product of 4 x 9 = 36.
7. Use the strategy of addition solve the following problem: 3 x 19.
   1. Students’ addition strategies may vary. Some students may look for friendly numbers. For example, 3 x 20 is the same as 20 + 20 + 20 = 60. That is 3 too many, so we must count back 3 from 60 to get 3 x 19 = 57. Other students may find tens: 19 = 10 + 9. They could then find 3 x 10 = 30 and 3 x 9 = 27, which adds to a final answer of 57.
8. Tim was able to do 7 pullups at the playground. Tim’s older sister was able to do 9 times as many! How many pullups did she do? What strategy did you use and why?
   1. Although students’ strategies will likely vary, they should find the product of 7 x 9 to be 63.
9. Provide an example to illustrate why order does not matter when multiplying two numbers together. Use pictures, number sentences, and/or sentences to support your answer.
   1. Students’ examples will vary; however they should note that order does not matter when multiplying two numbers together because they produce equivalent answers.
10. Who was Pythagoras and what was his claim to fame?
    1. Pythagoras was a famous mathematician and philosopher. He was born in 850 B.C. in Greece and is best known for the famous Pythagorean Theorem, a mathematical formula about the sides of right triangles.