Percentage of a Number: Using Decimals

You have learned that to find 1% of a number means finding 1/100 of it. Similarly, finding 60% of a number means finding 60/100 (or 6/10) of it.

In these types of expressions, the word "of" translates into **multiplication**:

1% of 90	OR	60% of $700
↓		↓
1% × 90		60% × $700

Next, let's write those percentages as *decimals*. We get:

1% of 90	OR	60% of $700
↓		↓
0.01 × 90		0.6 × $700

This gives us another way to calculate a certain percentage of a number (or a percentage of some quantity):

To calculate a percentage of a number, you need to do TWO simple changes:

1. **Change the percentage into a decimal.**
2. **Change the word "of" into multiplication.**

Example 1. Find 70% of 80.

Following the shortcut, we write this as 0.7 × 80.

(*Remember*, in decimal multiplication, you multiply as if there were no decimal points, and the answer will have as many decimal digits as the total number of decimal digits in all of the factors.)

So, when you multiply 0.7 × 80, think of multiplying 7 × 80 = 560. Since 0.7 has one decimal digit, and 80 has none, the answer has one decimal digit. Thus, 0.7 × 80 = 56.0 or just 56.

You can also use common sense and estimation: 0.7 × 80 must be less than 80, yet more than 1/2 of 80, which is 40. Since 7 × 8 = 56, you know that the answer must be 56—not 5.6 or 560.

Example 2. Find 3% of $4,000.

First, write this as 0.03 × $4,000. Next, multiply without decimal points: 3 × $4,000 = $12,000.
Lastly, put the decimal point so that the answer will have *two* decimal digits: $120.00.

Example 3. Find 23% of 5,500 km.

Write this as 0.23 × 5,500 km and use a calculator. The answer is 1,265 km. This makes sense, because 10% of 5,500 km is 550 km, and 20% of it is 1,100 km. Therefore, 1,265 km as 23% of 5,500 km is reasonable.

1. "Translate" the expressions into multiplications by a decimal. Solve, using mental math.

a. 20% of 70 _____ × _____ = _____	**b.** 90% of 50 _____ × _____ = _____	**c.** 80% of 400 _____ × _____ = _____
d. 60% of $8 _____ × _____ = _____	**e.** 9% of 3,000 _____ × _____ = _____	**f.** 7% of 40 L _____ × _____ = _____
g. 150% of 44 kg _____ × _____ = _____	**h.** 200% of 56 students _____ × _____ = _____	**i.** 2% of 1,500 km _____ × _____ = _____