



Crack the Vault Code

Someone locked the vault with a 4-digit code. Work out what each shape is worth and crack it.

Name: _____ Date: _____

1 THE KEY

$$+ = 1 \quad ? = \square \quad \text{⚡} = 8 \quad ? = \square \quad \heartsuit = 7 \quad \triangle? = \square$$

Every symbol is a whole number from -9 to 20 (some are negative!). A number in front of a shape means multiply: 2 stars = 2 x star. A small 2 after a shape means square it: star² = star x star.

2 FIND THE MISSING VALUES

Some shapes in the key are missing. Use these to work them out, in order, and write them into the key.

$$\bullet + 7 = 3$$

$$\text{⚡} - \blacktriangle = 16$$

$$\hexagon - \heartsuit = -12$$

3 CRACK THESE

$$1. (+ + \blacktriangle) \times \heartsuit = \square$$

$$2. 3\bullet - 2+ + \heartsuit = \square$$

CODE 1

$$3. \heartsuit - \text{⚡} = \square$$

$$4. + + \text{⚡} = \square$$

CODE 2

$$5. \heartsuit \times \text{⚡} - \hexagon = \square$$

$$6. \bullet \times + - \hexagon = \square$$

CODE 3

$$7. + \times (\heartsuit - \bullet) = \square$$

$$8. 3\bullet - 2\heartsuit + \hexagon = \square$$

CODE 4

$$9. + - \blacktriangle - \bullet = \square$$

$$10. \text{⚡} + \blacktriangle = \square$$

4 THE VAULT CODE

Write the ONES digit of your answers to problems 2, 4, 6, 8 (the ones tagged CODE 1-4), in that order. That opens the vault.

Answer Key

Crack the Vault Code · Grade 7 Crack the Code

The key

+ cross = 1 ⬡ hexagon = -5 (hidden) ⚡ lightning bolt = 8 ● circle = -4 (hidden) ♥ heart = 7
 ▲ triangle = -8 (hidden)

Every symbol is a whole number from -9 to 20 (some are negative!).

1. $(+ + \blacktriangle) \times \heartsuit$ ((cross + triangle) x heart) -49
2. $3\bullet - 2+ + \heartsuit$ (3 x circle - 2 x cross + heart) -7
3. $\heartsuit - \text{⚡}$ (heart - lightning bolt) -1
4. $+ + \text{⚡}$ (cross + lightning bolt) 9
5. $\heartsuit \times \text{⚡} - \blacklozenge$ (heart x lightning bolt - hexagon) 61
6. $\bullet \times + - \blacklozenge$ (circle x cross - hexagon) 1
7. $+ \times (\heartsuit - \bullet)$ (cross x (heart - circle)) 11
8. $3\bullet - 2\heartsuit + \blacklozenge$ (3 x circle - 2 x heart + hexagon) -31
9. $+ - \blacktriangle - \bullet$ (cross - triangle - circle) 13
10. $\text{⚡} + \blacktriangle$ (lightning bolt + triangle) 0

Vault code: **7 9 1 1**