



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

$$\begin{array}{l} \blacktriangle = 11 \quad \square = \square \quad \heartsuit = 5 \quad \textcircled{?} = \square \quad \blacklozenge = \square \\ \text{⚡} = \square \end{array}$$

Every symbol is a whole number from 1 to 20. 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.

$$2\bigcirc + \heartsuit = 41$$

$$\blacksquare \times \bigcirc = 72$$

$$\blacklozenge \times \blacksquare = 64$$

$$\text{⚡}^2 = 64$$

3 CRACK THESE

$$1. \blacktriangle^3 - \text{⚡} = \square$$

$$2. (\blacklozenge + \bigcirc)^2 = \square$$

CODE 1

$$3. 2 \times (\blacktriangle + \blacksquare) - \text{⚡} = \square$$

$$4. (\text{⚡} + \bigcirc)^2 = \square$$

CODE 2

$$5. 2 \times (\text{⚡} + \blacklozenge) - \heartsuit = \square$$

$$6. \blacktriangle^2 + \heartsuit = \square$$

CODE 3

$$7. (\bigcirc - \blacktriangle) \times (\bigcirc + \blacktriangle) = \square$$

$$8. \blacksquare^2 + \blacktriangle = \square$$

CODE 4

$$9. \heartsuit \times \blacklozenge \div \text{⚡} = \square$$

$$10. \heartsuit^3 - \blacktriangle = \square$$

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 6 Crack the Code

The key

▲ triangle = **11** ■ square = **4** (hidden) ♥ heart = **5** ○ ring = **18** (hidden) ◆ diamond = **16** (hidden)
 ⚡ lightning bolt = **8** (hidden)

Every symbol is a whole number from 1 to 20.

1. $\text{▲}^3 - \text{⚡}$ (triangle³ - lightning bolt) **1323**
2. $(\text{◆} + \text{○})^2$ ((diamond + ring)²) **1156**
3. $2 \times (\text{▲} + \text{■}) - \text{⚡}$ (2 x (triangle + square) - lightning bolt) **22**
4. $(\text{⚡} + \text{○})^2$ ((lightning bolt + ring)²) **676**
5. $2 \times (\text{⚡} + \text{◆}) - \text{♥}$ (2 x (lightning bolt + diamond) - heart) **43**
6. $\text{▲}^2 + \text{♥}$ (triangle² + heart) **126**
7. $(\text{○} - \text{▲}) \times (\text{○} + \text{▲})$ ((ring - triangle) x (ring + triangle)) **203**
8. $\text{■}^2 + \text{▲}$ (square² + triangle) **27**
9. $\text{♥} \times \text{◆} \div \text{⚡}$ (heart x diamond / lightning bolt) **10**
10. $\text{♥}^3 - \text{▲}$ (heart³ - triangle) **114**

Vault code: **6667**