



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

$$\begin{array}{l} \bigcirc = 19 \quad \heartsuit = \square \quad \spadesuit = \square \quad \text{⚡} = \square \quad \star = 11 \\ \triangle = \square \end{array}$$

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.

$$2\heartsuit + \star = 43$$

$$\spadesuit^2 = 289$$

$$\text{⚡} \times \spadesuit - \star = 40$$

$$\triangle \times \heartsuit - \bigcirc = 141$$

3 CRACK THESE

$$1. \quad 2 \times (\bigcirc + \spadesuit) - \heartsuit = \square$$

$$2. \quad \bigcirc^3 - \spadesuit = \square$$

CODE 1

$$3. \quad 3\text{⚡} - 2\triangle + \heartsuit = \square$$

$$4. \quad (\heartsuit - \triangle) \times (\heartsuit + \triangle) = \square$$

CODE 2

$$5. \quad 3\triangle - 2\star + \spadesuit = \square$$

$$6. \quad \triangle^2 + \heartsuit^2 = \square$$

CODE 3

$$7. \quad \triangle \times \heartsuit - \text{⚡}^2 = \square$$

$$8. \quad \text{⚡}^2 + \heartsuit = \square$$

CODE 4

$$9. \quad (\bigcirc - \star) \times (\bigcirc + \star) = \square$$

$$10. \quad \text{⚡}^3 = \square$$

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

 ring = **19**
  heart = **16** (hidden)
  diamond = **17** (hidden)
  lightning bolt = **3** (hidden)
  star = **11**
 triangle = **10** (hidden)

Every symbol is a whole number from 1 to 20.

1. $2 \times (\bigcirc + \blacklozenge) - \heartsuit$ (2 x (ring + diamond) - heart) **56**
2. $\bigcirc^3 - \blacklozenge$ (ring³ - diamond) **6842**
3. $3\text{⚡} - 2\blacktriangle + \heartsuit$ (3 x lightning bolt - 2 x triangle + heart) **5**
4. $(\heartsuit - \blacktriangle) \times (\heartsuit + \blacktriangle)$ ((heart - triangle) x (heart + triangle)) **156**
5. $3\blacktriangle - 2\star + \blacklozenge$ (3 x triangle - 2 x star + diamond) **25**
6. $\blacktriangle^2 + \heartsuit^2$ (triangle² + heart²) **356**
7. $\blacktriangle \times \heartsuit - \text{⚡}^2$ (triangle x heart - lightning bolt²) **151**
8. $\text{⚡}^2 + \heartsuit$ (lightning bolt² + heart) **25**
9. $(\bigcirc - \star) \times (\bigcirc + \star)$ ((ring - star) x (ring + star)) **240**
10. ⚡^3 (lightning bolt³) **27**

Vault code: **2 6 6 5**