



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

$$\begin{array}{l} \text{⚡} = \square \quad \text{☾} = \square \quad \text{⊙} = \square \quad \text{⬠} = 4 \quad \text{⊙} = \square \\ \blacksquare = 18 \end{array}$$

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.

$$\text{⚡} \times \text{⬠} - \blacksquare = 50$$

$$\bullet^2 = 81$$

$$\text{☾} \times \text{⬠} - \text{⚡} = 35$$

$$\bigcirc \times \bullet - \text{⬠} = 86$$

3 CRACK THESE

$$1. (\text{⬠} + \text{⚡})^2 = \square$$

$$2. 2 \times (\text{⬠} + \bigcirc) - \text{☾} = \square$$

CODE 1

$$3. \blacksquare^2 + \text{⚡} = \square$$

$$4. \text{⚡}^2 + \bullet^2 = \square$$

CODE 2

$$5. (\text{☾} + \text{⚡})^2 = \square$$

$$6. 2 \times (\bullet + \bigcirc) - \text{⚡} = \square$$

CODE 3

$$7. \text{☾}^2 + \bigcirc = \square$$

$$8. (\text{☾} - \text{⬠}) \times (\text{☾} + \text{⬠}) = \square$$

CODE 4

$$9. \text{⚡}^2 + \text{⬠}^2 = \square$$

$$10. (\bullet - \text{⬠}) \times (\bullet + \text{⬠}) = \square$$

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

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The key

⚡ lightning bolt = **17** (hidden) 🌙 moon = **13** (hidden) ○ ring = **10** (hidden) ⬡ hexagon = **4**
 ● circle = **9** (hidden) ■ square = **18**

Every symbol is a whole number from 1 to 20.

1. $(\text{⬡} + \text{⚡})^2$ ((hexagon + lightning bolt)^2) **441**
2. $2 \times (\text{⬡} + \text{○}) - \text{🌙}$ (2 x (hexagon + ring) - moon) **15**
3. $\text{■}^2 + \text{⚡}$ (square^2 + lightning bolt) **341**
4. $\text{⚡}^2 + \text{●}^2$ (lightning bolt^2 + circle^2) **370**
5. $(\text{🌙} + \text{⚡})^2$ ((moon + lightning bolt)^2) **900**
6. $2 \times (\text{●} + \text{○}) - \text{⚡}$ (2 x (circle + ring) - lightning bolt) **21**
7. $\text{🌙}^2 + \text{○}$ (moon^2 + ring) **179**
8. $(\text{🌙} - \text{⬡}) \times (\text{🌙} + \text{⬡})$ ((moon - hexagon) x (moon + hexagon)) **153**
9. $\text{⚡}^2 + \text{⬡}^2$ (lightning bolt^2 + hexagon^2) **305**
10. $(\text{●} - \text{⬡}) \times (\text{●} + \text{⬡})$ ((circle - hexagon) x (circle + hexagon)) **65**

Vault code: **5 0 1 3**