



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

$$\text{Crescent Moon} = \square \quad \text{Heart} = \square \quad \text{Pentagon} = -1 \quad \text{Circle} = 5 \quad \text{Triangle} = 19 \quad \text{Diamond with ?} = \square$$

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.

$$\text{Crescent Moon} + \text{Circle} = 2$$

$$\text{Heart} + \text{Circle} = 17$$

$$\text{Diamond} + 6 = 4$$

3 CRACK THESE

1. $\text{Crescent Moon} + \text{Circle} = \square$

2. $\text{Circle}^2 - \text{Diamond} = \square$

CODE 1

3. $\text{Crescent Moon} - \text{Triangle} - \text{Pentagon} = \square$

4. $\text{Circle} \times (\text{Triangle} - \text{Pentagon}) = \square$

CODE 2

5. $\text{Crescent Moon} + \text{Circle} \times \text{Diamond} = \square$

6. $3\text{Triangle} - 2\text{Circle} + \text{Heart} = \square$

CODE 3

7. $\text{Crescent Moon} \times \text{Triangle} - \text{Circle} = \square$

8. $\text{Circle} \times \text{Heart} = \square$

CODE 4

9. $\text{Triangle} \times \text{Diamond} - \text{Heart} = \square$

10. $\text{Heart} + \text{Diamond} = \square$

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

 moon = **-3** (hidden)
  heart = **12** (hidden)
  pentagon = **-1**
  circle = **5**
  triangle = **19**
 diamond = **-2** (hidden)

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

- | | | |
|-----|---|------------|
| 1. |  +  (moon + circle) | 2 |
| 2. |  ² -  (circle ² - diamond) | 27 |
| 3. |  -  -  (moon - triangle - pentagon) | -21 |
| 4. |  × ( - ) (circle x (triangle - pentagon)) | 100 |
| 5. |  +  ×  (moon + circle x diamond) | -13 |
| 6. | 3  - 2  +  (3 x triangle - 2 x circle + heart) | 59 |
| 7. |  ×  -  (moon x triangle - circle) | -62 |
| 8. |  ×  (circle x heart) | 60 |
| 9. |  ×  -  (triangle x diamond - heart) | -50 |
| 10. |  +  (heart + diamond) | 10 |

Vault code: **7090**