

The Coral Crypt Equations

Solve the algebraic symbol equations to find the hidden values of the starfish, trident, shell, and pearl, then use them to decode the combination to the ocean floor vault.

Name: _____ Date: _____

1 THE KEY

$$\begin{array}{l} \text{?} = \square \quad \text{?} = \square \quad \text{?} = \square \quad \text{?} = \square \quad \text{?} = 26 \\ \text{?} = 7 \end{array}$$

Every symbol is a whole number from 1 to 30. 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. sqrt(shape) is the square root of that shape's value.

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.

$$\begin{array}{l} 3\bigcirc + 3\bullet = 111 \\ 2\bigcirc - 2\bullet = -26 \end{array}$$

$$\blacklozenge^2 = 196$$

$$2\text{?} + \blacktriangle = 45$$

3 CRACK THESE

$$1. \sqrt{\bullet} + \bullet = \square$$

$$2. \sqrt{\bullet} + \bigcirc^2 = \square$$

CODE 1

$$3. (\bullet + \blacklozenge)^2 = \square$$

$$4. \bullet^2 + \bigcirc^2 = \square$$

CODE 2

$$5. (\blacklozenge + \text{?})^2 = \square$$

$$6. 3\blacklozenge - 2\bigcirc + \text{?} = \square$$

CODE 3

$$7. \bigcirc^3 - \blacktriangle = \square$$

$$8. \blacktriangle^3 - \text{?} = \square$$

CODE 4

$$9. \text{?}^2 - \text{?} = \square$$

$$10. \text{?}^2 - \bullet = \square$$

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 sunken brass treasure.

Answer Key

The Coral Crypt Equations · Grade 8 Crack the Code

The key

 hexagon = **14** (hidden)
  lightning bolt = **19** (hidden)
  circle = **25** (hidden)
  ring = **12** (hidden)

 moon = **26**
  triangle = **7**

Every symbol is a whole number from 1 to 30.

1. $\text{sqrt}(\bullet) + \bullet$ (sqrt(circle) + circle) **30**
2. $\text{sqrt}(\bullet) + \bigcirc^2$ (sqrt(circle) + ring^2) **149**
3. $(\bullet + \hexagon)^2$ ((circle + hexagon)^2) **1521**
4. $\bullet^2 + \bigcirc^2$ (circle^2 + ring^2) **769**
5. $(\hexagon + \text{lightning bolt})^2$ ((hexagon + lightning bolt)^2) **1089**
6. $3\hexagon - 2\bigcirc + \text{lightning bolt}$ (3 x hexagon - 2 x ring + lightning bolt) **37**
7. $\bigcirc^3 - \triangle$ (ring^3 - triangle) **1721**
8. $\triangle^3 - \text{lightning bolt}$ (triangle^3 - lightning bolt) **324**
9. $\text{lightning bolt}^2 - \text{moon}$ (lightning bolt^2 - moon) **335**
10. $\text{lightning bolt}^2 - \bullet$ (lightning bolt^2 - circle) **336**

Vault code: **9974**