



The Redstone Circuit Code

Solve the system of equations where blocks of obsidian, diamond, redstone, and emerald represent unknown variables to crack the passcode.

Name: _____ Date: _____

1 THE KEY

$$\begin{array}{l} \text{⚡} = 15 \quad \text{⚠} = \square \quad \text{⌚} = \square \quad \text{★} = \square \quad \text{⬡} = \square \\ \text{⬠} = \square \end{array}$$

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.

$$\text{⬠} + 3 \text{★} = 80$$

$$3 \text{⬠} - 2 \text{★} = 53$$

$$\text{⬠} \times \text{★} - \text{⚡} = 121$$

$$2 \text{⌚} + \text{⬠} = 48$$

$$2 \text{▲} + \text{★} = 67$$

3 CRACK THESE

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

$$2. \text{sqrt}(\text{▲}) + \text{▲} = \square$$

CODE 1

$$3. 2 \text{⬠}^2 + 3 \text{★} - \text{⚡} = \square$$

$$4. (\text{⌚} + \text{⬠})^2 - \text{⌚}^2 = \square$$

CODE 2

$$5. \text{★}^2 - \text{⬠}^2 = \square$$

$$6. (\text{⌚} + \text{⚡})^2 - \text{⌚}^2 = \square$$

CODE 3

$$7. \text{▲} \times \text{⬠} \times \text{⬠} = \square$$

$$8. \text{▲}^2 - \text{⌚}^2 = \square$$

CODE 4

$$9. \text{⬠} \times \text{★} \times \text{⬠} = \square$$

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

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 reinforced obsidian chest.

Answer Key

The Redstone Circuit Code · Grade 9 Crack the Code

The key

⚡ lightning bolt = **15** ▲ triangle = **25** (hidden) ☾ moon = **20** (hidden) ★ star = **17** (hidden)
 ⬡ hexagon = **29** (hidden) ◆ diamond = **8** (hidden)

Every symbol is a whole number from 1 to 30.

1. $\sqrt{\text{◆}^2 + \text{⚡}^2}$ (sqrt(diamond^2 + lightning bolt^2)) **17**
2. $\sqrt{\text{▲}}$ + ▲ (sqrt(triangle) + triangle) **30**
3. $2\text{⬡}^2 + 3\text{★} - \text{⚡}$ (2 x hexagon^2 + 3 x star - lightning bolt) **1718**
4. $(\text{☾} + \text{⬡})^2 - \text{☾}^2$ ((moon + hexagon)^2 - moon^2) **2001**
5. $\text{★}^2 - \text{◆}^2$ (star^2 - diamond^2) **225**
6. $(\text{☾} + \text{⚡})^2 - \text{☾}^2$ ((moon + lightning bolt)^2 - moon^2) **825**
7. ▲ x ⬡ x ◆ (triangle x hexagon x diamond) **5800**
8. $\text{▲}^2 - \text{☾}^2$ (triangle^2 - moon^2) **225**
9. ◆ x ★ x ⬡ (diamond x star x hexagon) **3944**
10. $(\text{⬡} - \text{▲}) \times (\text{⬡} + \text{▲})$ ((hexagon - triangle) x (hexagon + triangle)) **216**

Vault code: **0 1 5 5**