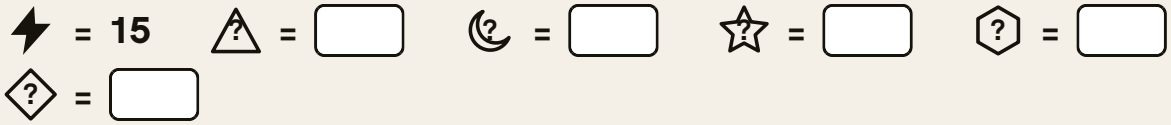
The Redstone Circuit Code

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

Name: _____ **Date:** _____

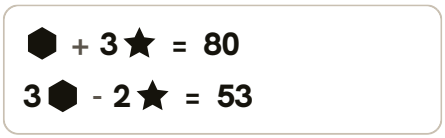
1 THE KEY

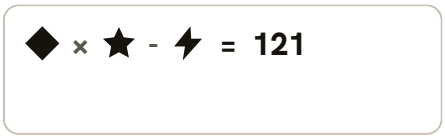


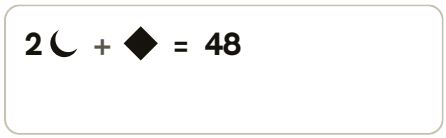
Every symbol is a whole number from 1 to 30. A number in front of a shape means multiply: 2 stars = 2 x star. A small 2 after a shape means square it: star^2 = star x star. sqrt(shape) is the square root of that shape's value.

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.







3 CRACK THESE

1. $\text{sqrt}(\blacklozenge^2 + \lightning^2) =$ ☐

2. $\text{sqrt}(\blacktriangle) + \blacktriangle =$ ☐ CODE 1

3. $2\hexagon^2 + 3\bigstar - \lightning =$ ☐

4. $(\moon + \hexagon)^2 - \moon^2 =$ ☐ CODE 2

5. $\bigstar^2 - \blacklozenge^2 =$ ☐

6. $(\moon + \lightning)^2 - \moon^2 =$ ☐ CODE 3

7. $\blacktriangle \times \hexagon \times \blacklozenge =$ ☐

8. $\blacktriangle^2 - \moon^2 =$ ☐ CODE 4

9. $\blacklozenge \times \bigstar \times \hexagon =$ ☐

10. $(\hexagon - \blacktriangle) \times (\hexagon + \blacktriangle) =$ ☐

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.

TEACHER / PARENT

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(◆² + ⚡²)**	(sqrt(diamond^2 + lightning bolt^2))	**17**
2.	**sqrt(▲) + ▲**	(sqrt(triangle) + triangle)	**30**
3.	**2⬢² + 3★ - ⚡**	(2 x hexagon^2 + 3 x star - lightning bolt)	**1718**
4.	**(☾ + ⬢)² - ☾²**	((moon + hexagon)^2 - moon^2)	**2001**
5.	**★² - ◆²**	(star^2 - diamond^2)	**225**
6.	**(☾ + ⚡)² - ☾²**	((moon + lightning bolt)^2 - moon^2)	**825**
7.	**▲ × ⬢ × ◆**	(triangle x hexagon x diamond)	**5800**
8.	**▲² - ☾²**	(triangle^2 - moon^2)	**225**
9.	**◆ × ★ × ⬢**	(diamond x star x hexagon)	**3944**
10.	**(⬢ - ▲) × (⬢ + ▲)**	((hexagon - triangle) x (hexagon + triangle))	**216**

Vault code: **0 1 5 5**