

The Culinary Codebreaker

Solve the algebraic food equations to crack the code and open the master pastry chef's locked spice safe.

Name: _____ Date: _____

1 THE KEY

$$\begin{array}{lclclcl}
 \text{+} = \square & \blacksquare = 18 & \text{?} = \square & \text{?} = \square & \blacklozenge = 11 \\
 \text{?} = \square & & & &
 \end{array}$$

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.

$$\text{?} \times \blacksquare = 342$$

$$\text{+}^2 = 81$$

$$\blacklozenge \times \text{?} = 380$$

$$\bullet^2 = 64$$

3 CRACK THESE

$$1. \blacklozenge \times \text{?} - \bullet^2 = \square$$

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

CODE 1

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

$$4. \text{?}^3 - \blacklozenge = \square$$

CODE 2

$$5. 2 \times (\bullet + \blacklozenge) - \blacklozenge = \square$$

$$6. \blacklozenge^2 - \bullet^2 = \square$$

CODE 3

$$7. 2 \times (\text{?} + \blacklozenge) - \bullet = \square$$

$$8. \blacklozenge^3 = \square$$

CODE 4

$$9. \bullet^3 = \square$$

$$10. \text{+}^2 + \blacklozenge^2 = \square$$

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 master pastry safe.

Answer Key

The Culinary Codebreaker · Grade 6 Crack the Code

The key

 cross = 9 (hidden)
  square = 18
  pentagon = 20 (hidden)
  moon = 19 (hidden)
 diamond = 11
 circle = 8 (hidden)

Every symbol is a whole number from 1 to 20.

1. $\diamond \times \text{moon} - \text{circle}^2$ (diamond x moon - circle^2) **145**
2. $(\text{moon} + \text{circle})^2$ ((moon + circle)^2) **729**
3. $\diamond^2 + \text{cross}$ (diamond^2 + cross) **130**
4. $\text{moon}^3 - \diamond$ (moon^3 - diamond) **6848**
5. $2 \times (\text{circle} + \text{pentagon}) - \diamond$ (2 x (circle + pentagon) - diamond) **45**
6. $\diamond^2 - \text{circle}^2$ (diamond^2 - circle^2) **57**
7. $2 \times (\text{moon} + \text{pentagon}) - \text{circle}$ (2 x (moon + pentagon) - circle) **70**
8. pentagon^3 (pentagon^3) **8000**
9. circle^3 (circle^3) **512**
10. $\text{cross}^2 + \text{pentagon}^2$ (cross^2 + pentagon^2) **481**

Vault code: 9870