

# MathShed

## 3 is a Magic Number! Workbook



13th-17th November 2023

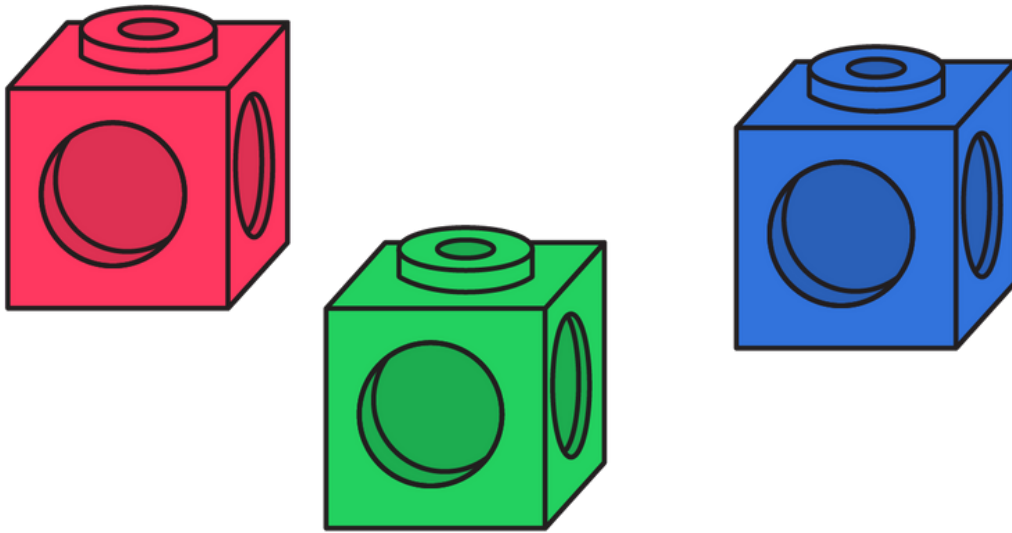


Name: \_\_\_\_\_

# Three Cubes



**Jodie is stacking three coloured cubes.**



**She starts by stacking them red, green, then blue.**

**How many different ways could she stack them?**

**How do you know you have found them all?**

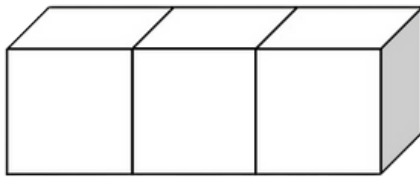
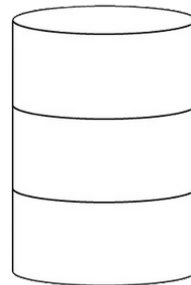
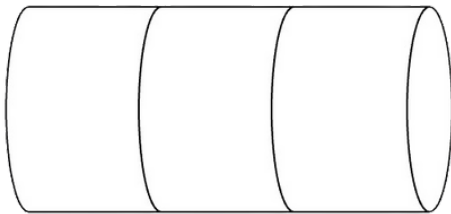
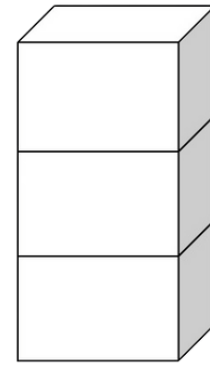
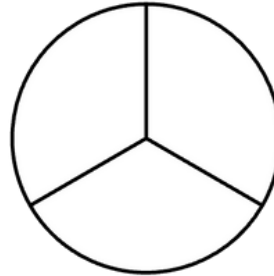
**How many combinations are there where red is in the middle? How do you know?**



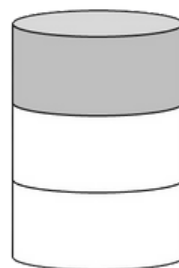
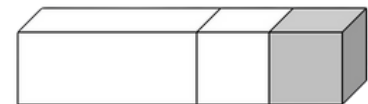
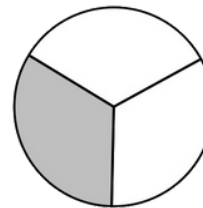
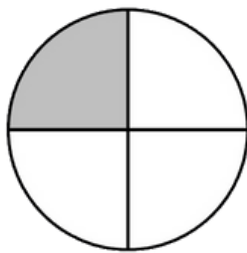


# Colour $\frac{1}{3}$

Shade  $\frac{1}{3}$  of each of the shapes shown below.



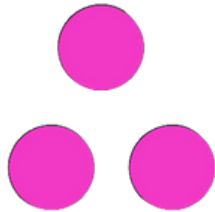
Circle the shapes that have  $\frac{1}{3}$  shaded.





# Finding $\frac{1}{3}$

Circle a third. Then complete the sentences below.



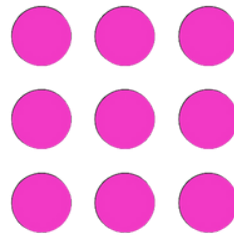
A third of \_\_\_ is \_\_\_.  
 $\frac{1}{3}$  of \_\_\_ = \_\_\_



A third of \_\_\_ is \_\_\_.  
 $\frac{1}{3}$  of \_\_\_ = \_\_\_



A third of \_\_\_ is \_\_\_.  
 $\frac{1}{3}$  of \_\_\_ = \_\_\_



A third of \_\_\_ is \_\_\_.  
 $\frac{1}{3}$  of \_\_\_ = \_\_\_

Complete the sentences below.

$$\frac{1}{3} \text{ of } 9 = \underline{\quad}$$

$$\frac{1}{3} \text{ of } 21 = \underline{\quad}$$

A third of 18 is \_\_\_.

A third of 30 is \_\_\_.

$$\frac{1}{3} \text{ of } 15 = \underline{\quad}$$

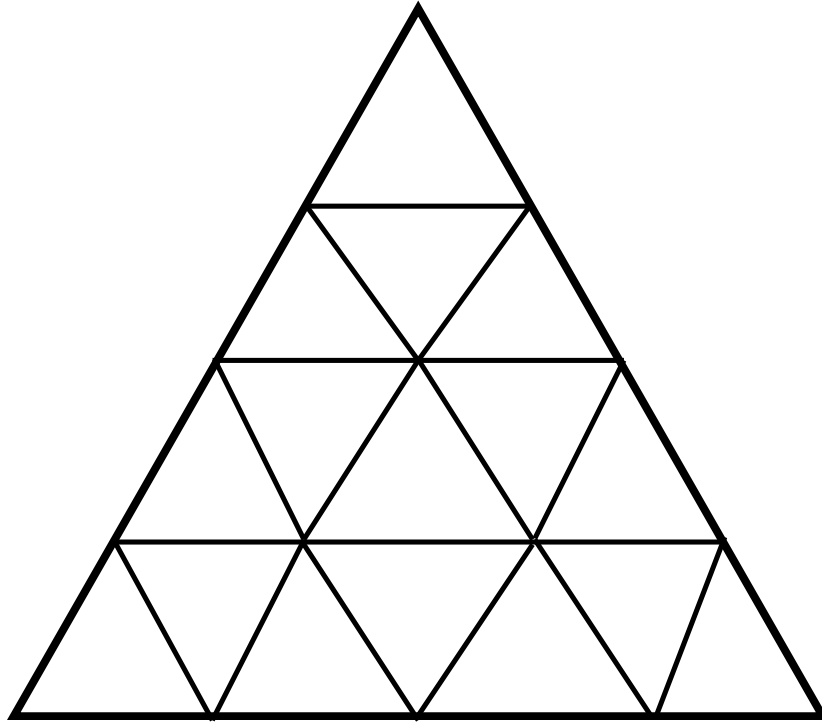
$$\frac{1}{3} \text{ of } 36 = \underline{\quad}$$



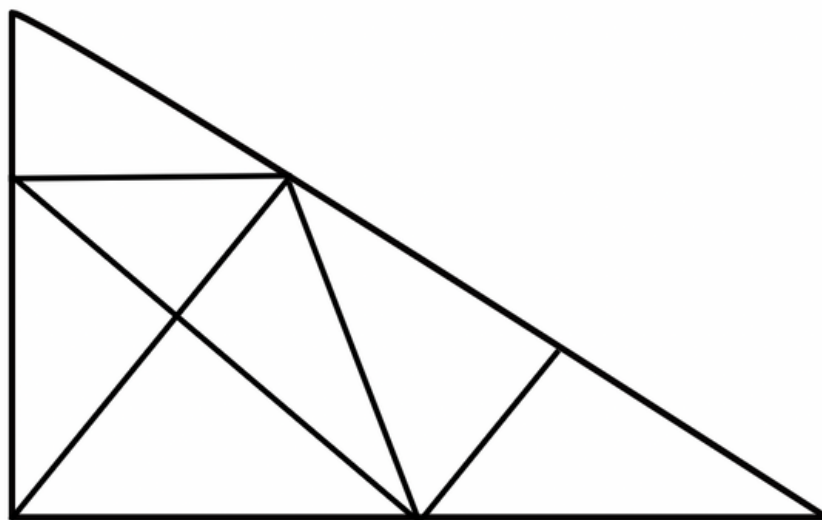
# How Many Triangles?



How many triangles are there?



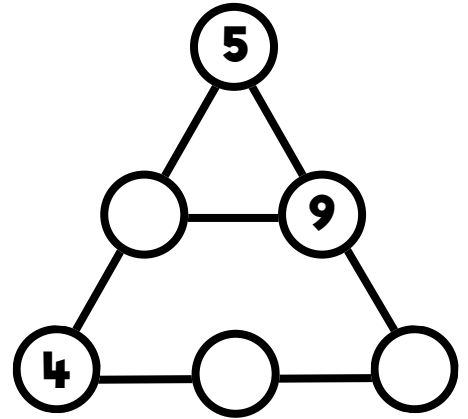
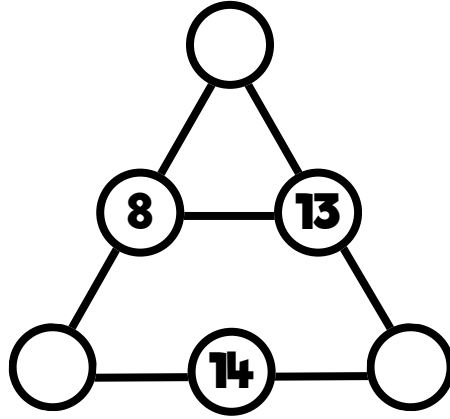
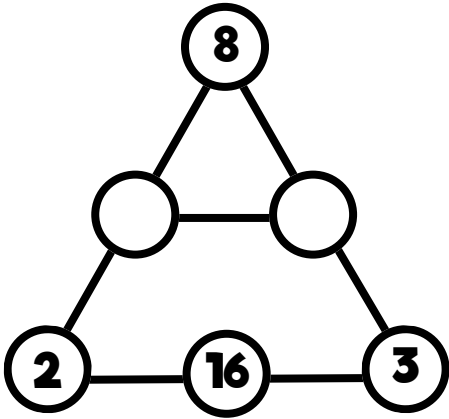
How many triangles are there?



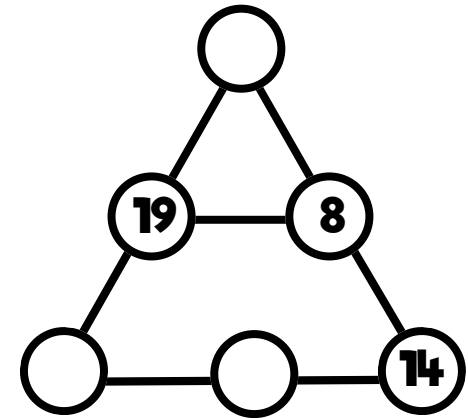
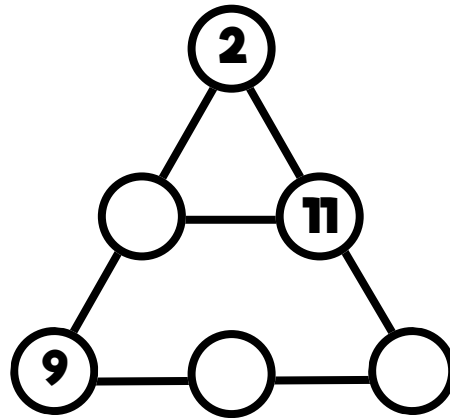
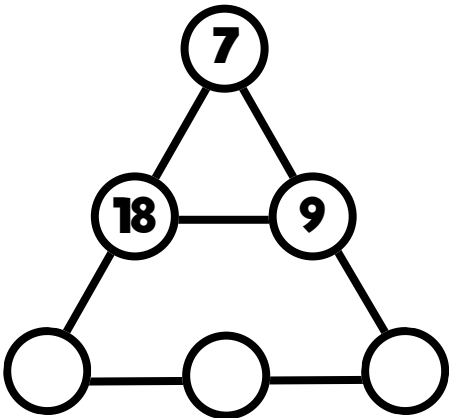
# Triangle Additions



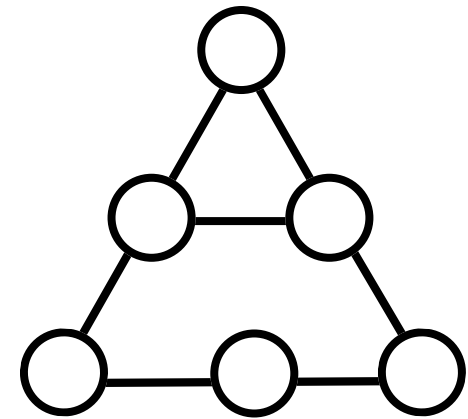
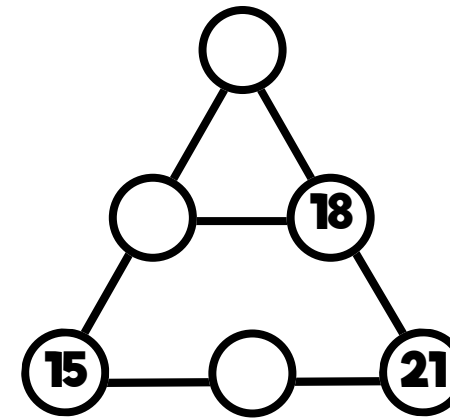
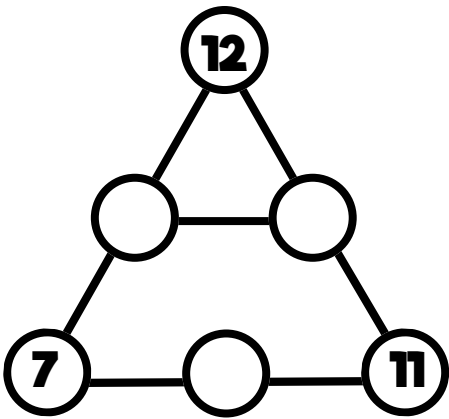
Make each line add up to 21.



Make each line add up to 27.



Make each line add up to 42





# Three Digit Cards

Here are three digit cards.



**What is the highest number that can be made using the digit cards?**

**What is the sum of the digit cards?**

**What is the number when all the digit cards are multiplied together?**

**Chen puts another digit card down and makes a new number.**

**What is the highest number he could possibly make?**

**What is the lowest number he could possibly make?**



# Tricycle Shop

Ahmed works in a tricycle shop.



**How many wheels does he need to make 8 tricycles?**

**How many wheels does he need to make 12 tricycles?**

**Ahmed has 63 wheels. How many tricycles can he make?**

**Ahmed has 49 wheels. How many tricycles can he make?**

**Ahmed has made 8 tricycles and still has 21 wheels left.  
How many tricycles can he make altogether?**



Did you know that the prefix 'tri-' means three?

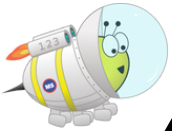




# Multiplication Maze

Help Astrobee find a way to the star by colouring in a path of multiplication answers.

Make sure you find the answer to the question first.



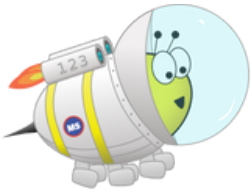
$3 \times 3$	9 $2 \times 3$	6 $11 \times 3$	36 $4 \times 3$	12 $8 \times 3$	24 $5 \times 3$	21 $1 \times 3$
6 $4 \times 3$	12 $5 \times 3$	33 $7 \times 3$	21 $9 \times 3$	27 $0 \times 3$	0 $12 \times 3$	3 $3 \times 3$
21 $8 \times 3$	15 $7 \times 3$	0 $5 \times 3$	12 $0 \times 3$	24 $5 \times 3$	36 $8 \times 3$	21 $6 \times 3$
24 $2 \times 3$	6 $9 \times 3$	18 $8 \times 3$	24 $1 \times 3$	15 $4 \times 3$	12 $6 \times 3$	★ 18
3 $9 \times 3$	27 $3 \times 3$	9 $1 \times 3$	3 $8 \times 3$	24 $10 \times 3$	30 $9 \times 3$	27 $2 \times 3$



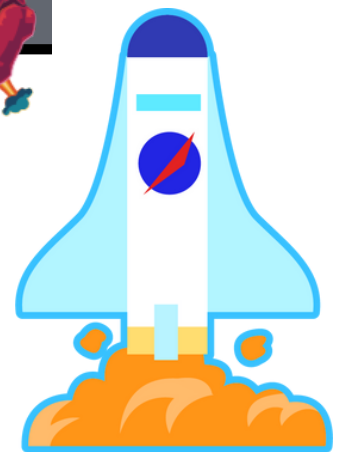


# A-maze-ing Multiples

Help Astrobee get to the rocket using only multiples of three.

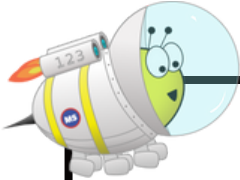


The maze consists of a grid of grey paths. The path starts from Astrobee at the top left and ends at a rocket at the bottom right. The path is blocked by red, spiky obstacles with numbers on them. The numbers are: 3, 6, 19, 29, 15, 18, 12, 38, 36, 27, 30, 36, 41, 90, 12, 9, 24, 45, 60, 36, 27, 33, 43, 39.



# Divisibility Rules!

How do you know if a number is divisible by 3?  
If the sum of the digits is divisible by 3, then the  
number is divisible by 3.



Is 375 divisible by 3?

$$3 + 7 + 5 = 15$$

15 is divisible by 3.

Yes, 375 is divisible by 3.

Circle the numbers that are divisible by 3.



Write 3 three-digit numbers that are divisible by 3  
and 3 three-digit numbers that are not divisible by 3.

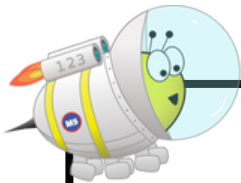
Numbers that are divisible by 3	Numbers that are not divisible by 3





# Three Threes!

Use exactly three 3's to form every integer from 0 to 9, using only the operators +, -, ×, ÷, () (brackets), . (decimal point),  $\sqrt{\quad}$  (square root) and ! (factorial).



Example:

$$(3 + 3) - 3 = 6$$

$$3 \ 3 \ 3 = 0$$

$$3 \ 3 \ 3 = 5$$

$$3 \ 3 \ 3 = 1$$

$$3 \ 3 \ 3 = 6$$

$$3 \ 3 \ 3 = 2$$

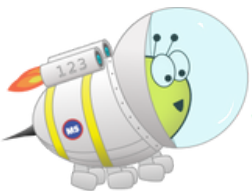
$$3 \ 3 \ 3 = 7$$

$$3 \ 3 \ 3 = 3$$

$$3 \ 3 \ 3 = 8$$

$$3 \ 3 \ 3 = 4$$

$$3 \ 3 \ 3 = 9$$



Did you know that in maths, the exclamation mark (!) means you multiply a number by all the smaller numbers leading down to 1?

So, 5! is  $5 \times 4 \times 3 \times 2 \times 1$ , which equals 120.

