

MathShed

3 is a Magic Number! Workbook



13th-17th November 2023

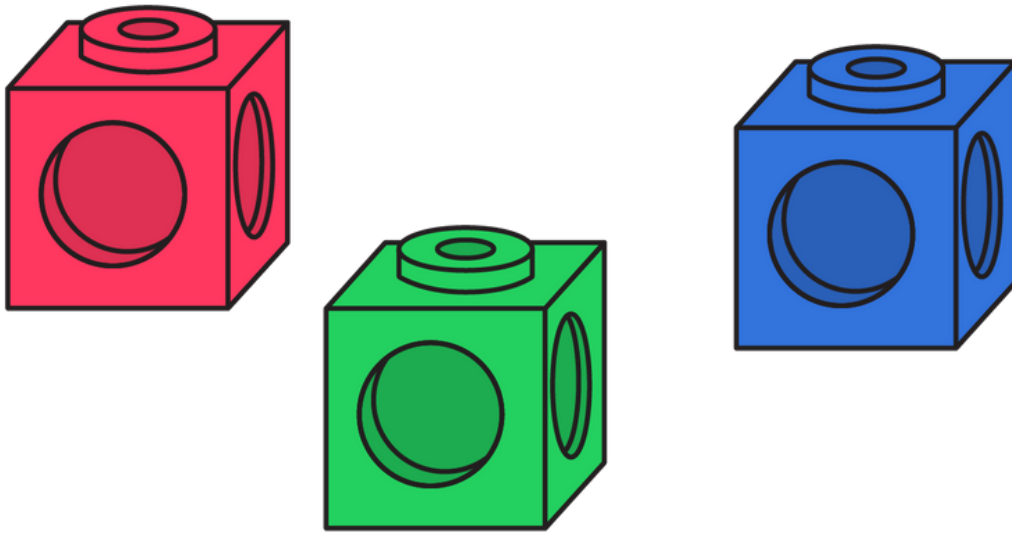


Name: _____

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?

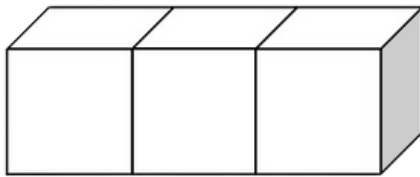
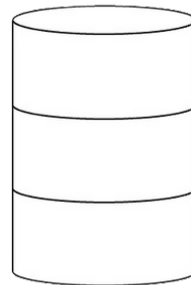
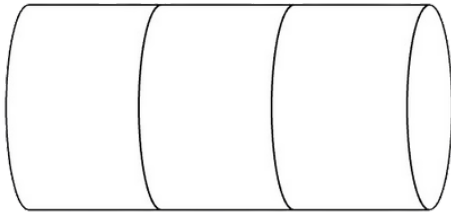
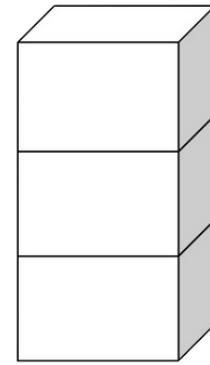
How many combinations are there where red is in the middle? How do you know?



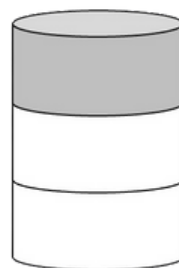
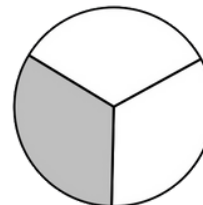
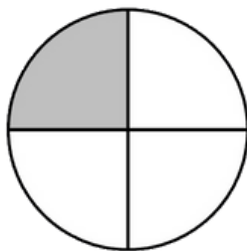


Colour $\frac{1}{3}$

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



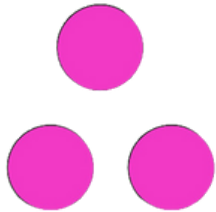
Circle the shapes that have $\frac{1}{3}$ shaded.





Finding $\frac{1}{3}$

Circle a third. Then complete the sentences below.



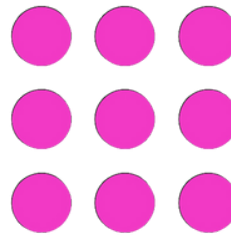
A third of ___ is ___.
 $\frac{1}{3}$ of ___ = ___



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 ___.

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

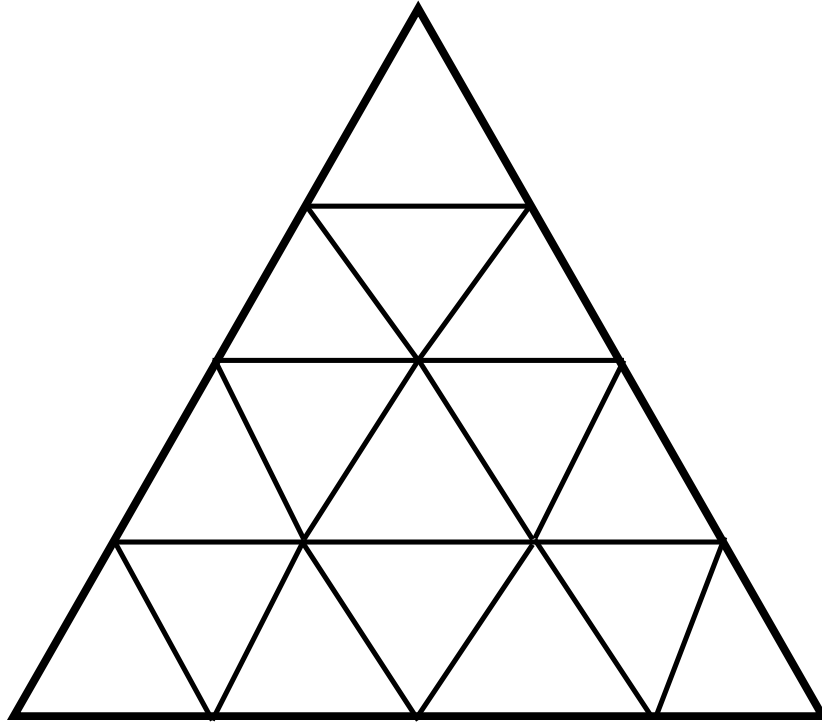
$$\frac{1}{3} \text{ of } 36 = \underline{\quad}$$



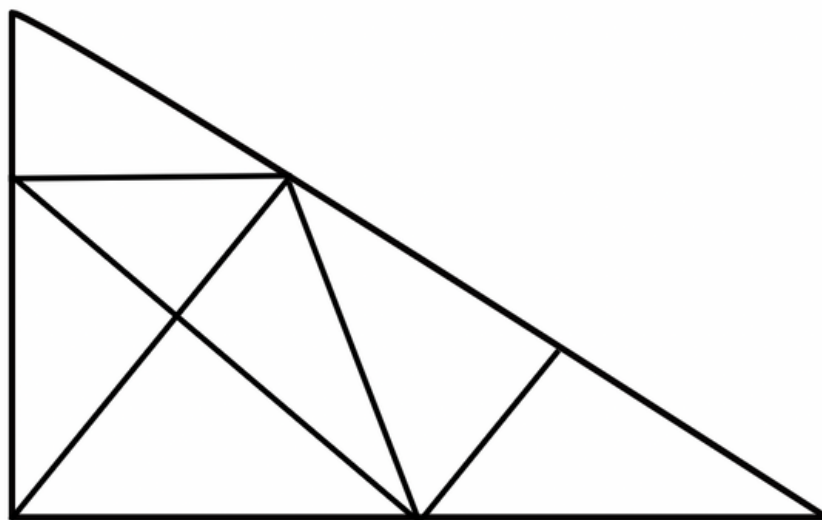
How Many Triangles?



How many triangles are there?



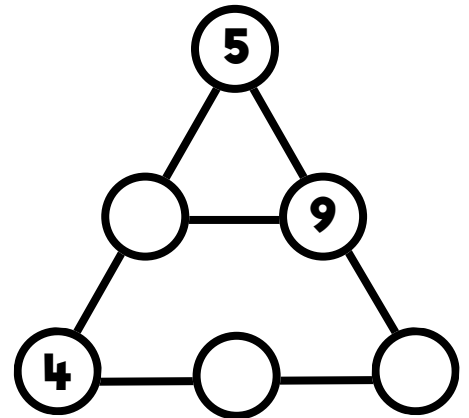
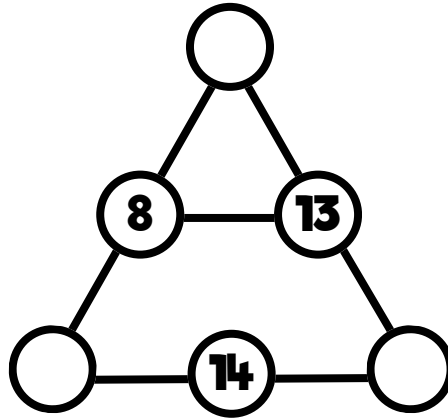
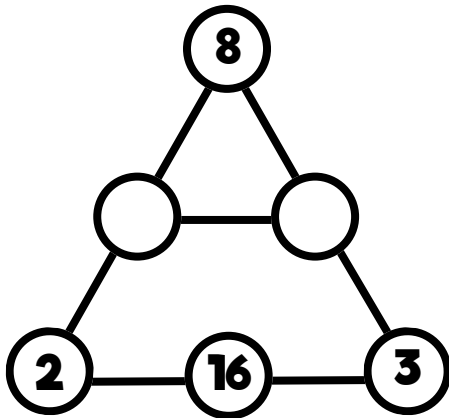
How many triangles are there?



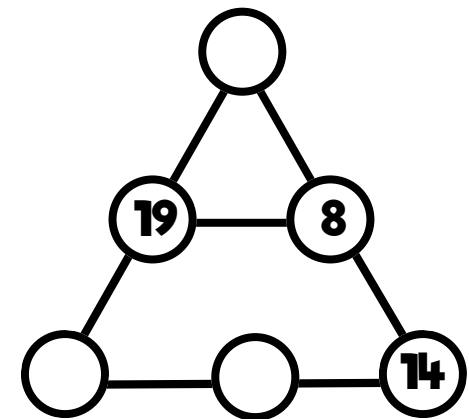
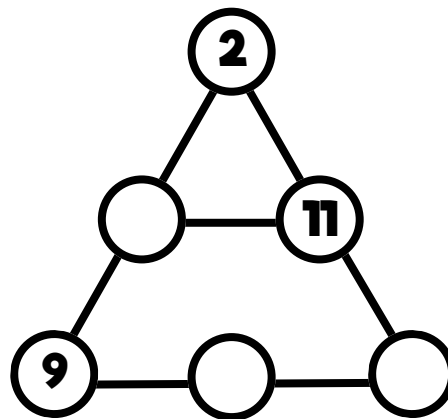
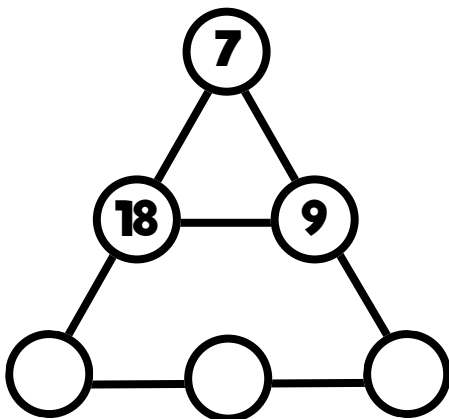
Triangle Additions



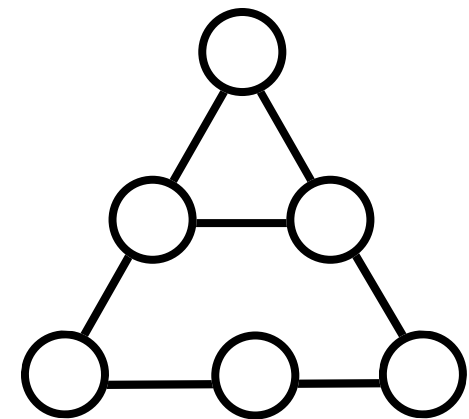
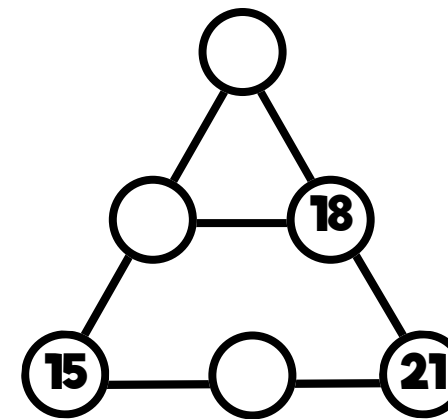
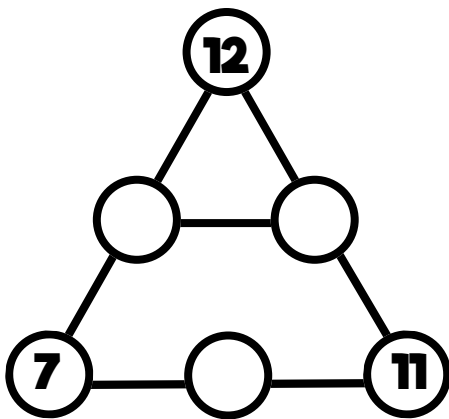
Make each line add up to 21.



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?



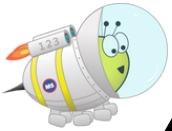
Did you know that the prefix 'tri-' means three?



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.



A multiplication maze grid consisting of 5 rows of triangles. Each triangle contains a multiplication problem and its answer. The goal is to find a path from Astrobee to the star.

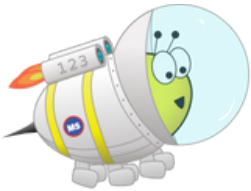
3×3	9 2×3	6 11×3	36 4×3	12 8×3	24 5×3	21 1×3
6 4×3	12 5×3	33 7×3	21 9×3	27 0×3	0 12×3	3 3×3
21 8×3	15 7×3	0 5×3	12 0×3	24 5×3	36 8×3	21 6×3
24 2×3	6 9×3	18 8×3	24 1×3	15 4×3	12 6×3	★ 18
3 9×3	27 3×3	9 1×3	3 8×3	24 10×3	30 9×3	27 2×3



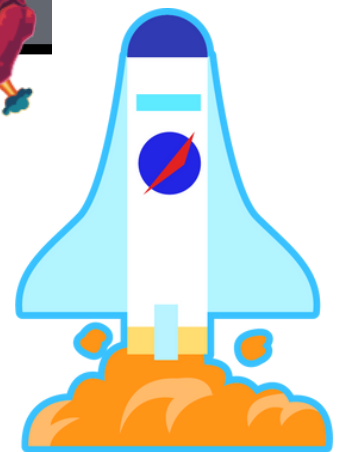


A-maze-ing Multiples

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

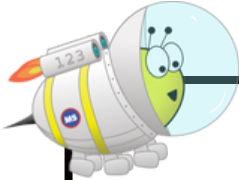


The maze consists of a grid of roads. The numbers on the roads are: 3, 6, 19, 29, 15, 18, 12, 38, 36, 27, 30, 36, 41, 90, 12, 9, 24, 45, 60, 36, 27, 33, 43, 39. The goal is to find a path from Astrobees to the rocket using only multiples of three.



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.

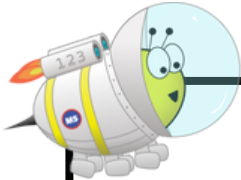
Numbers that are divisible by 3	Numbers that are not divisible by 3





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:

$$(3 \times 3) - 3 = 6$$

$$3 \ 3 \ 3 = 0$$

$$3 \ 3 \ 3 = 5$$

$$3 \ 3 \ 3 = 1$$

$$3 \ 3 \ 3 = 6$$

$$3 \ 3 \ 3 = 2$$

$$3 \ 3 \ 3 = 7$$

$$3 \ 3 \ 3 = 3$$

$$3 \ 3 \ 3 = 8$$

$$3 \ 3 \ 3 = 4$$

$$3 \ 3 \ 3 = 9$$



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.

