



**BRIDGEWATER**  
PRIMARY SCHOOL

# Mathematics at Bridgewater

Parent's Workshop

16<sup>th</sup> March 2017



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## Reasoning with numbers

- Before children can reason with numbers they must be secure with key skills in adding, subtracting, multiplying (groups of) and dividing (sharing).
- We teach these key skills using mental arithmetic.
- When the children have secured the key skills for their year group, they are encouraged to use these skills to reason with number.
- Next we have some examples of how we encourage our children to reason.

Numbers are flexible  
- Ways of making 6:

$$1 + 1 + 1 + 1 + 1 + 1 = 6$$

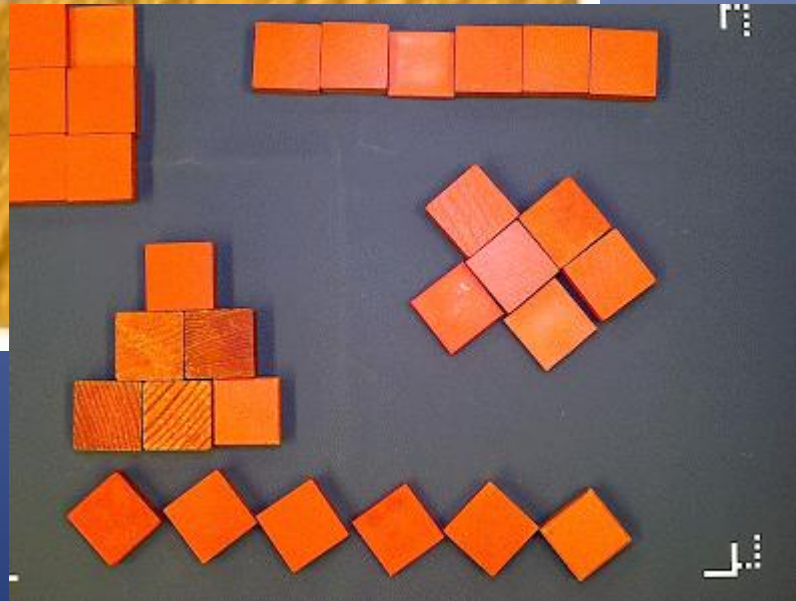
$$3 + 2 + 1 = 6$$

$$2 + 2 + 2 = 6$$

$$3 + 3 = 6$$

$$3 + 1 + 1 = 6$$

$$4 + 2 = 6$$





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Once a child is secure with a fact like  $8 + 6 = 14$   
they can relate this to other facts:

$$8 + 6 = 14$$

$$18 + 6 = 24$$

$$28 + 6 = 34$$

$$38 + 6 = 44$$

$$8 + 6 = 14$$

$$8 + 16 = 24$$

$$8 + 26 = 34$$

$$8 + 36 = 44$$

$$8 + 6 = 14$$

$$18 + 16 = 34$$

$$38 + 26 = 64$$

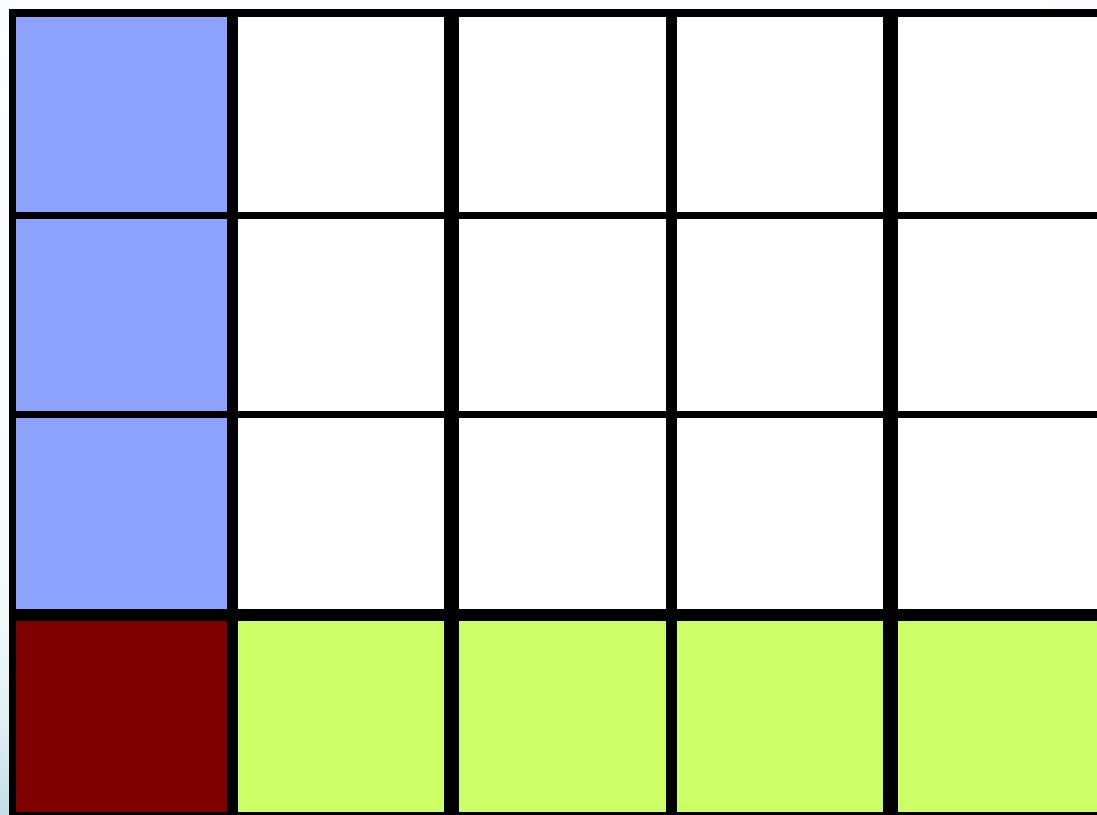
$$?8 + ?6 = ?4$$

***How many of the following names can I correctly use for this shape? Reason with your partner!***

- 1. Polygon***
- 2. Quadrilateral***
- 3. Parallelogram***
- 4. Rectangle***
- 5. Trapezium***
- 6. Kite***
- 7. Pentagon***
- 8. Rhombus***
- 9. 2-D Shape***
- 10. Square***
- 11. Oblong***
- 12. Cube***



*What fractions can you see? Vocabulary*



Here' s the Answer, what' s the Question?

*12 is the answer.*

*What is the question?*

*8, 2 and 4 are the digits.*

*What is the number sentence?*

## Here's the Answer, what's the Question?

- *24 years is the answer.*
- *What is the question?*

*What is 6 lots of 4 years?*

*What is a century take away 76 years?*

*What is a sixth of 144 years?*

*What is four lots of 5 years, then add 4 more?*

*If a man went to a foreign country in the year 2000, then he calls his family in 2012 and tells them that he is planning to return in 12 years time, how many years will he have been away from England?*



## Odd one out

45 71 60



$$\frac{2}{4} \quad \frac{2}{8} \quad \frac{4}{8}$$

## Spot the mistake

$$\begin{array}{r} 35 \\ + 47 \\ \hline 91 \end{array}$$

$$\begin{array}{r} 45 \\ - 37 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 35 \\ \cdot 3 \\ \hline 915 \end{array}$$

$$\begin{array}{r} 18 \\ 2 \overline{) 216} \end{array}$$

## Spot the mistake

As you can see, this worksheet has already been completed. Today you're the teacher and it's your job to mark the answers! Read each question carefully and then look at the children's answers. They're all wrong! Can you help them by showing the correct method?

1. Eighty aliens landed at the North pole. Each alien had 3 laser cannons. How many laser canons were there altogether?

$$80 \times 3 = (8 \times 3) \times 0 = 24 \times 0 = 0$$

2. Seven locksmiths in Ipswich all sold 50 locks on Monday. They didn't sell any more that week. How many locks had been sold in Ipswich by Friday?

$$7 \times 50 = (7 \times 5) \times 10 = 24 \times 10 = 2400$$

**What's the same ...  
what's different?**

**15**

**20**

**16**

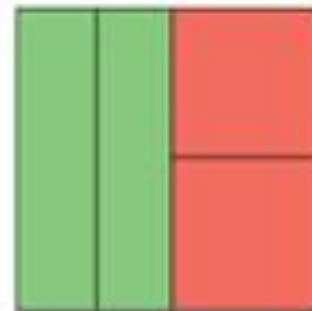
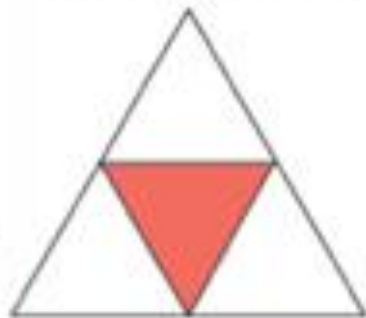
**What's the same ...  
what's different?**

**12 21 32 36**

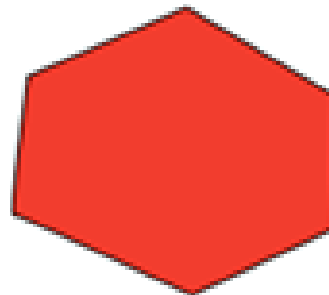
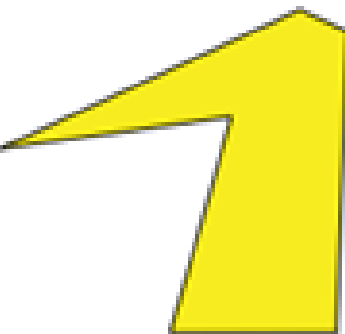
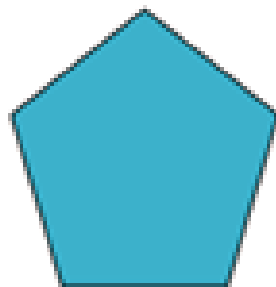
**How many different answers can  
you find?**

# What's the same ... what's different?

What's the same? What's different?



**What's the same ...  
what's different?**

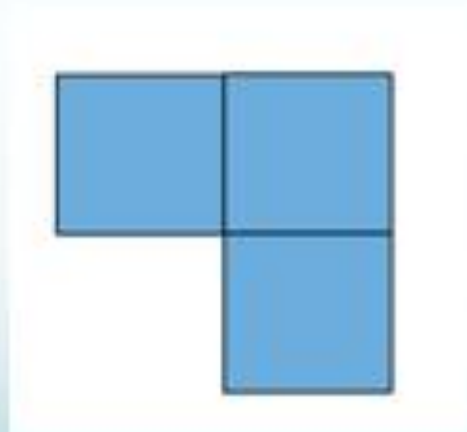


## What do you notice? What if?

- This is  $\frac{1}{4}$  of a shape.

What could the whole shape look like?

- What if this was  $\frac{1}{5}$  of the whole shape?





## Guess my number or shape

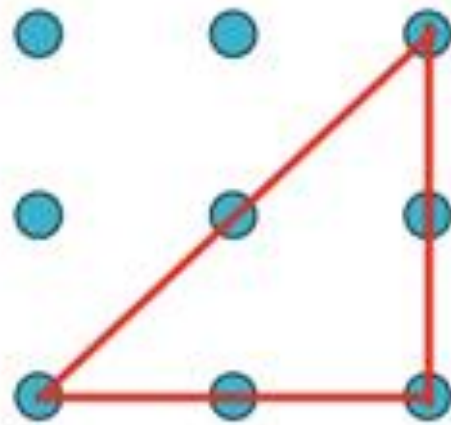
- I am higher than 90 but less than the square of 10.
- I am an even number
- I am divisible by 3 and 6 with no remainder, but not by 9.
- What number am I?

## Guess my number or shape

- ▶ **I have 3 digits.**
- ▶ **I am divisible by 2, 5 and 10.**
- ▶ **My first 2 digits are prime but are not the same as each other.**
  
- ▶ *What is the smallest number I can be?*
- ▶ *What is the largest number I can be?*

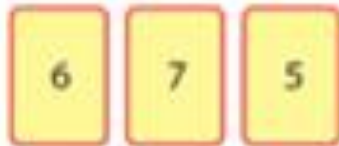
## Find all the possibilities

- How many different triangles can be made?

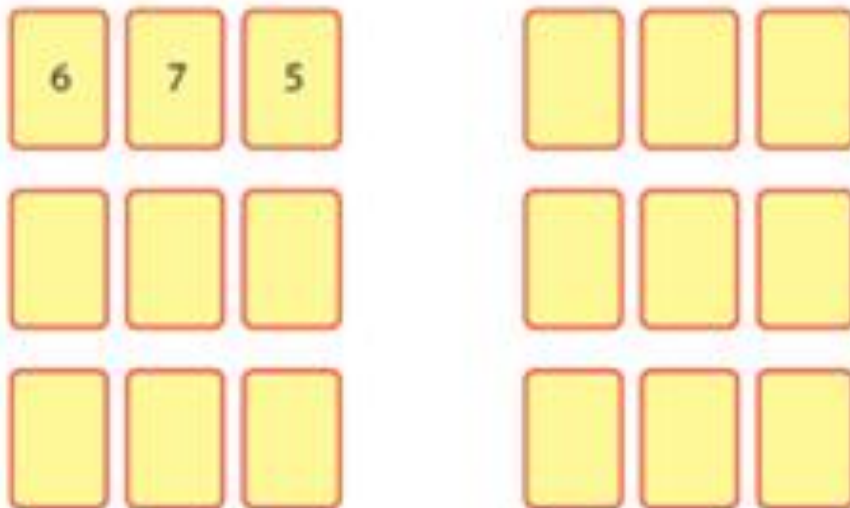


## Find all the possibilities

Megan has made a 3-digit number with these cards.



What other 3-digit numbers can she make with these cards?



What is the largest number she can make?

## What's missing

$$\begin{array}{r} 2 \square \\ \times \quad 8 \\ \hline 176 \end{array}$$

$$\begin{array}{r} 2 \square \\ \times \quad \square \\ \hline 112 \end{array}$$

$$\begin{array}{r} 1 \square 4 \\ \times \quad \square \\ \hline 736 \end{array}$$

## What's missing

### Expanded Column

Empty Box


$$\begin{array}{r} 68\boxed{\phantom{0}} \\ + 2\boxed{\phantom{0}}8 \\ \hline 15 \\ 120 \\ 800 \\ \hline 935 \end{array}$$


# What's missing

**Expanded Column**

Empty Box






































|       |                      |                      |   |                             |
|-------|----------------------|----------------------|---|-----------------------------|
|       | 100                  | 10                   | 1 |                             |
|       | <input type="text"/> | 4                    | 7 |                             |
| x     |                      | <input type="text"/> |   |                             |
| <hr/> |                      |                      |   |                             |
|       |                      | 28                   |   | ( <input type="text"/> x 7) |
|       | <input type="text"/> |                      |   | (4 x 40)                    |
|       | 400                  |                      |   | (4 x <input type="text"/> ) |
| <hr/> |                      |                      |   |                             |
|       | 588                  |                      |   |                             |

 Dane Primary School



# Shape Times Shape



|   |  |
|---|--|
|  x  x  =  |  x  =        |
|  x  =    |  x  =        |
|  x  =    |  x  =        |
|  x  =    |  x  =        |
|  x  =    |  x  =        |
|  x  =    |  x  =  |

The coloured shapes stand for eleven of the numbers from 0 to 12.

Each shape is a different number.

Can you work out what they are?

Thousands more problems can be found on the Nrich Maths website.