Year 1 – Number and Place Value

Practise counting, ordering and indicating a quantity

MASTERY

1

Heidi counted the fruit. Did she count correctly?

4 pineapples 3 apples 2 bananas

2

Are there enough pencils for each class?

Blue Class has 5 children.

Red Class has 7 children.

Yellow Class has 6 children.

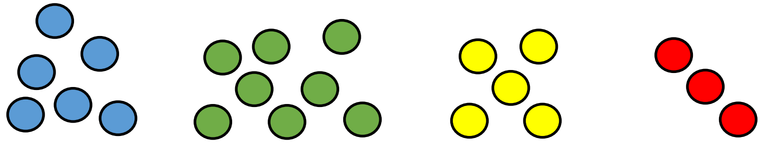
Purple Class has 7 children.

3

i) Put the numbers in order from largest to smallest.

7 13 0 ten one

ii) Put the groups in order from smallest to largest.



4

Dan has put the numbers in order:

18 11 10 7 4 2

His friend Susan says that he is wrong and that 2 should come first. Do you agree?

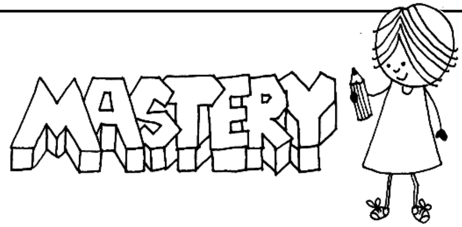
5

Always, sometimes or never?

- When ordering, you start with the smallest number
- When ordering from largest to smallest, 2-digit numbers come before 1-digit numbers

Primary Solutions

Year 2 – Number and Place Value
Compare and order numbers from 0 up to 100



1

Gary has put the symbols in these number sentences.

Is he correct?

35	=	20+15
34	=	30 + 14
41	<	14
35 + 10	>	45

2

Ian put these numbers in order. Is he correct?

25 46 83 19 98

3

<u>Always, sometimes or never?</u>

- You put the smallest number first when ordering numbers
- You need to use an equals symbol in a number sentence

4

i) Nicole has ordered these numbers but her friend Jane says she is wrong. Who is right?

98 87 64 53 25

ii) Jamie needs to put these numbers in order from smallest to biggest but doesn't know how to. Can you help him?

76 53 97 79 43

5

Alison needs to put the missing numbers and symbols into the boxes. Can you help her?

81 6 < 14 > 62

3	<		13		31
	>	12	76	<	
9		6		=	62

Identify, represent and estimate numbers using different representations

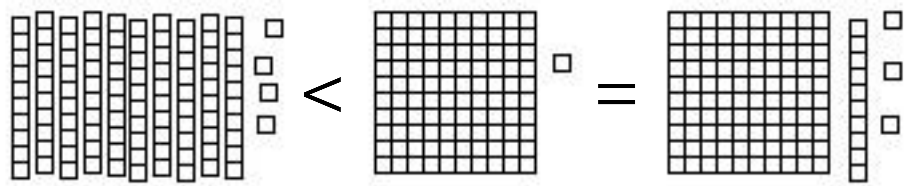
MASTERY

1 Emma is given the following digit cards and asked to make a 3-digit number that is less than 700.

4 7 1 8

i) What is the greatest number she could make?
ii) How many different numbers could she make?

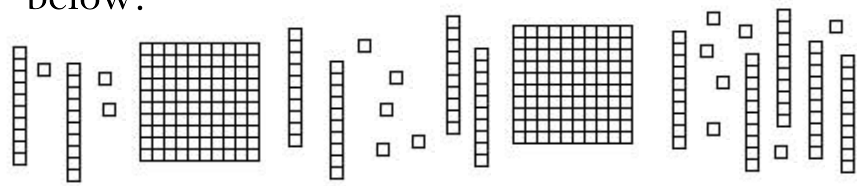
2 The statement below is false. Can you move 2 pieces of the base 10 equipment to make it correct?



3 Dennis is given 2 counters and the grid below. He says he can't represent any 3-digit number because he needs at least 3 counters. Is he right?

H	T	O

3 i) Look at the base-10 equipment below. Without counting, estimate what number is represented below.



ii) Now count the base-10 to find out exactly what number it represents
iii) How else could you have represented the same number with base-10 equipment?

4 Phil is given 7 counters and the grid below. The number shown (241) is one number he could create.

100s	10s	1s
● ●	● ● ● ●	●

He is told to put at least one counter in each box. What is the difference between the largest and smallest number he can make?

Primary Solutions

1

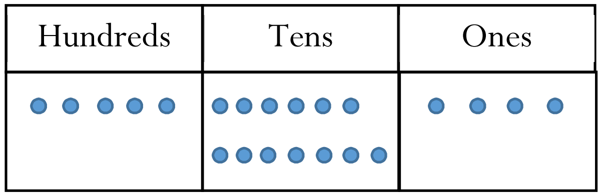
i) Evan was asked to add or take away 7 from a number. His answer was 616, but he has forgotten whether he added or subtracted. What could his starting number have been?

ii) Caitlin was asked to add 80 to 537, but she took 80 away by mistake. What answer did she get and what was the correct answer to the question?

2

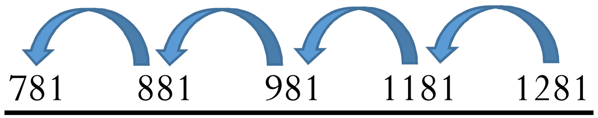
a) Liam has been asked to work out 564 + 70. He uses a chart and counters. What is wrong?

564 + 70 = 5134



b) What's wrong with Lyn's method for 1281 – 400?

1281 - 400 = 781



3

i) Tara and Stephan are trying to work out 842 add 80. Can you explain to them how to use a number-line to help them answer this question?

ii) Tara and Stephan don't use the method above. Tara says that 842 has 84 tens in it, so you just add 8 more tens. This means the answer has 92 tens, and two units, or 922. Stephan is confused because he says 842 has 4 tens. Who is right?

4

Always, sometimes or never?

- Subtracting a multiple of a hundred doesn't change the tens or ones column
- Adding a multiple of ten doesn't change the hundreds column

5

If you add 2 numbers, one with 3 in the ones column and one with 8 in the ones column, the answer will always have a one in the ones column. Is this true?

Year 4 – Number and Place Value
Count in multiples of 6, 7, 9, 25 and 1000

1

Freddie completes the following sequences, but he has made some errors. Can you explain his errors and how you noticed them?

a) 84, 90, 96, 103, 108, 114, 120, 126

b) 27000, 28000, 29000, 31000, 32000, 33000

c) 35, 42, 49, 56, 63, 70, 77, 84, 92

2

<u>Always, sometimes or never?</u>

- Numbers that appear when you count in 1000s also appear when you count in 25s
- Numbers that appear when you count in 25s also appear when you count in 1000s
- When you count in 1000s, only the thousands column changes
- When counting in 25s, the units column alternates between 0 and 5

3

Renee counts in 6s and in 9s and lists her answers. She realises that the number 54 appears in both of her lists.

a) What other numbers will be in both lists if she continues?

b) Can you see a connection between your numbers? Try to explain why this is the case.

4

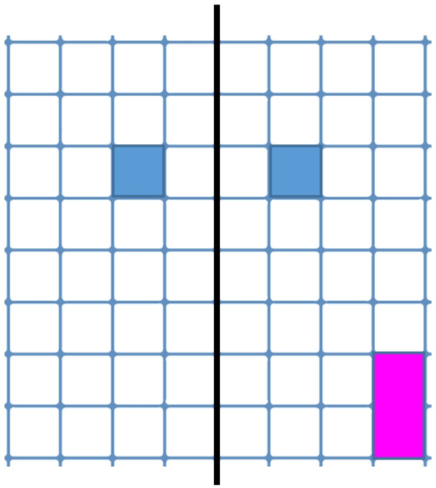
i) Priya starts to count in 9s: 9, 18, 27, 36. She notices that for each number, the digits add up to 9. Is this always the case? Are there exceptions and what are they? Go up to as high as you can with your numbers.

ii) Duncan notices that when he counts in 7s, the numbers he gets alternate between odd and even. He says that when he counts in 6s, an even number, the numbers will alternate too, but starting with even. Is he right? Try to explain.

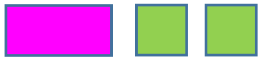
Identify lines of symmetry in 2-D shapes and complete simple symmetric figures

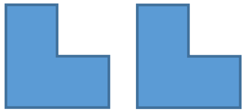
MASTERY

1



Place all the blocks below into the grid, making sure the pattern is symmetrical after each part.

Part 1: 

Part 2: 

Part 3: 

2

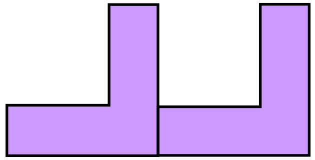
Andrea says that all shapes have at least one line of symmetry because you can just draw a line down the middle. Colin says that this is not true. Who do you agree with?

3

<u>Always, sometimes or never?</u>

- The number of lines of symmetry a shape has depends which way up it is
- A triangle has three lines of symmetry
- A rectangle doesn't have any lines of symmetry

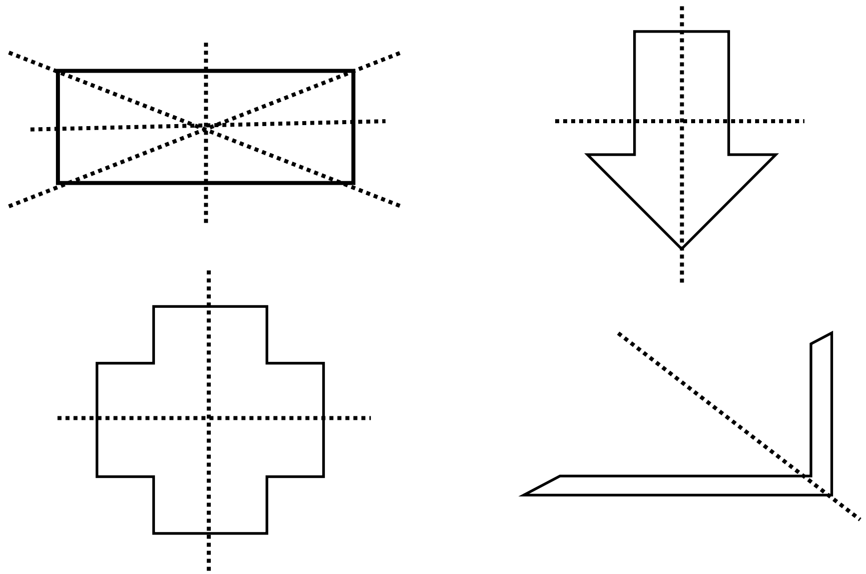
4



When positioned like this, the two L-shapes make a shape with no line of symmetry. Can you rearrange the shapes to make a shape with a line of symmetry? How many ways can you find?

5

Matty has marked the lines of symmetry on the shapes below. Find any mistakes, or missing lines, for each shape.



Primary Solutions

Year 5 – Number and Place Value
Round Any Number to 1,000,000

1

i) Laura thinks of a number. When she rounds it to the nearest ten, the answer is 27280. What number could Laura have started with? List all the possibilities.

ii) Matthew thinks of a number between 2000 and 3000. When he rounds to the nearest hundred, his answer is 30 more than when he rounds to the nearest ten. What could his number have been?

2

Always, sometimes or never?

- A rounded number is different to the original number
- Two numbers which both round to 370 when rounded to the nearest 10 have a difference of 5 or less
- A rounded number is more likely to be less than the original than more than the original

3

Peter says his score on a computer game rounds to 267000 when rounded to the nearest thousand. Charlotte says her score rounds to 270000 when she rounds to the nearest ten thousand, and is therefore the winner. Is she right?

4

ii) Round 378263 to the nearest ten thousand, Round 37826 to the nearest hundred. Add the answers together. What is the result?

i) Round 789736 to the nearest thousand. Round 49833 to the nearest hundred. Subtract the second answer from the first. What is the result?

5

To find the answer to 3672 + 8376, you could round each number to the nearest hundred and then add these together, or add the numbers and then round the answer to the nearest hundred. Do you get the same answer? Why? Is this always the case?

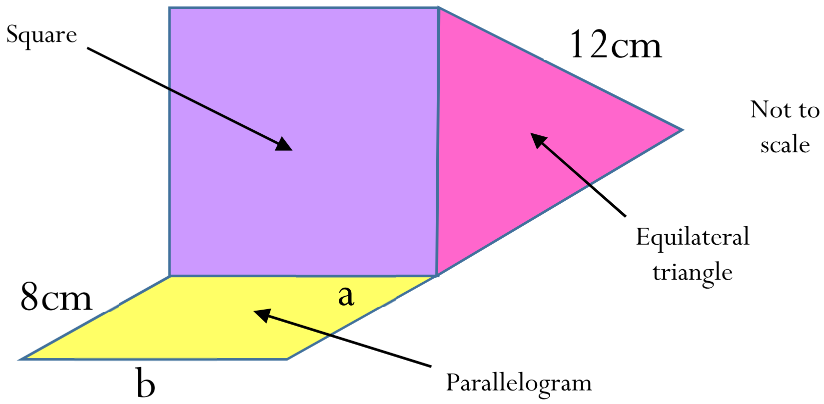
Primary Solutions

Year 5 – Geometry and Statistics

Identify missing lengths and angles / regular and irregular polygons

MASTERY

1. Look at the diagram below and work out the missing angle (a) and length (b). Which of the shapes are regular shapes?

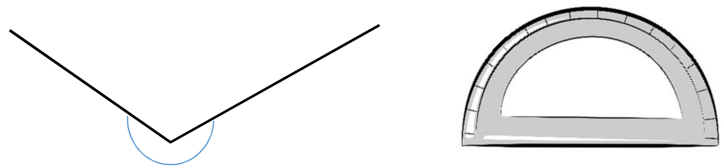


2. <u>Always, sometimes or never?</u>

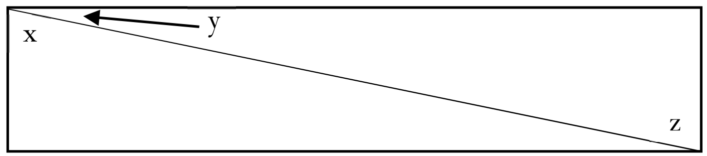
- A rectangle is a regular shape
- The angles round a point add up to 180°
- Hexagons are regular shapes

3. Rocco says that a rhombus is a shape with 4 equal sides, so it is a regular shape. Is he right?

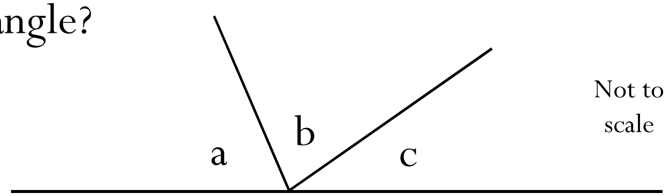
4. Elliott wants to measure a reflex angle, but he only has a 180° protractor so he says he can't do it. Bonnie says he can still do it. Is she right?



5. Look at the rectangle below. Angle x is five times as big as angle y. What is angle z?



6. Look at the straight line below. Angle a is 12° more than angle b. Angle c is 9° less than angle b. How big is each angle?



Primary Solutions

MASTERY

1

i) Gemma says that the number four million, thirty-two thousand, seven hundred and forty five is written: 4,32,745. Explain to her why this is not the way to write this number in digits.

ii) While discussing place value, Thomas says that the tens of thousands column is worth 20 times the value of the hundreds column. Luke says that it is actually worth 100 times the value. Who is right? Try to explain why.

2

Always, sometimes or never?

- If the first digit of a number is greater than zero, its value is more than all the other digits' values added together
- You can compare two numbers by looking only at one digit in each number
- A zero in the hundreds of thousands column has greater value than any digit in the thousands column

3

How many different ways can you add the missing digits to make the statements correct?

a) $3\square5{,}467 < 366{,}781 < 379{,}8\square7$

b) $\square{,}236{,}475 \leq 2{,}23\square{,}475 \leq 2{,}238{,}129$

4

Lola is thinking of a 6-digit number. The digit in the hundreds column is greater than the one in the thousands column. The number is greater than 799,999, but smaller than 899,999. The digit in the thousands column is the same as in the hundreds of thousands column. The digit in the tens of thousands column has less value than the one in the thousands column. The number is a multiple of 10. What could her number be? How many possibilities are there?

5

Ben has been told that there are more than 8 thousands in the number 478,247. He is confused; can you help him understand?

Year 6 – Measures

Use formulae for area and volume & calculate area of parallelograms and triangles

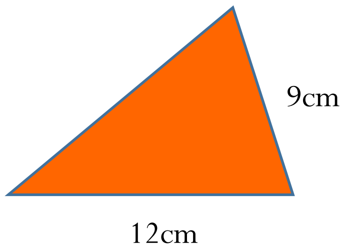
MASTERY

1 Jamie has worked out the area of this triangle. Do you agree with him? Try to explain.

$12 \times 9 = 108$

$108 \div 2 = 54$

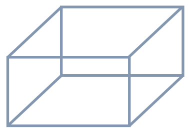
Area $= 54\text{cm}^2$



2 Catherine says that the area of the triangle can be found by halving the base, and multiplying by the height. Fiona says that you should multiply the base by the height, and then halve the answer. Whose method is correct?

3 Look at the cuboid. Its volume is 56cm^3. What could its height, width and depth be?

Not to scale



4 Josh uses 1cm^3 blocks to make a cuboid with a volume of 72cm^3. Sarah says that she knows that it isn't a cube. How can she know this?

5 <u>Always, sometimes or never?</u>

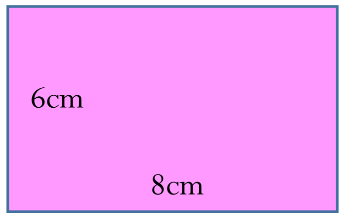
- The number for the volume of a cube is greater than the number for the area of one face

6 Rearrange the shapes below to show that the area of a parallelogram is equal to the base multiplied by the height.

7 Look at the diagram below. The rectangle has been split into two triangles. How does the diagram help to explain the formula for the area of a triangle?

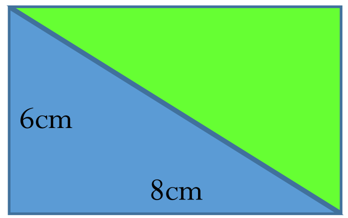
Rectangle

Area $= 8 \times 6 = 48\text{cm}^2$



Triangle

Area = ?



Primary Solutions