

Teacher Notes

Strand: Number, Geometry and Measures, Probability and Statistics, Algebra
Suggested Age: 5+

This is a quick fire quiz on general Mathematical knowledge covering facts related to geometry, measure, number and data. This quiz aims to get students to remember facts and concepts when they see them out of context in a random situation. Teachers should time this activity so that it lasts for no longer than one minute, giving six seconds per fact. The ability to quickly recall mathematical facts is necessary in future time pressured situations such as exams and tests. The emboldened letters in each statement should be replaced with words. This will get students thinking, and for the final challenge to make up two further questions of their own, students should use the questions as stimuli in order to arrive at a related statement, examples are provided below.

Solution

- 12 **MONTHS** in a **YEAR**
- 60 **MINUTES** in an **HOURL**
- A **PROTRACTOR** is used to measure **ANGLES**
- V, X and C are examples of **ROMAN NUMERALS**
- A **SQUARE** has 4 **RIGHT ANGLES**
- This line is **PERPENDICULAR**
- 16, 24, 32 and 40 are **MULTIPLES** of **EIGHT**
- 1 is the **NUMERATOR**, 2 is the **DEONOMINATOR**

Examples of other statements that students may arrive at:

- A **R** has 4 **RA** – A **rectangle** has 4 **right angles**.
- A **T** has 3 **S** – A **triangle** has 3 **sides**.
- 60 **S** in a **M** – 60 **seconds** in a **minute**.



Teacher Notes

Strand: Number

Group: Numbers and the Number System, Mental Methods of Calculation

Suggested Age: 6+

Start by finding 2 digits which add up to 5 (remembering that there are no 0's)

1+4

2+3

3+2

4+1

Encourage pupils to use a systematic approach

Then convert these to 2 digit numbers

You could extend this activity by discussing 3 digit numbers (or maybe even more!)

What if created 3 digit number – eg 113

4 digit numbers eg 1112

Etc...

Solution

14

23

32

41

The 100 Quiz

Teacher Notes

Strand: Number, Geometry and Measures

Group: Written Methods of Calculation, Number theory, Measures, Time

Suggested Age: 7+

The questions in this quiz relate to the number 100, and are split into sections, from easy through to more challenging questions requiring working out. The quiz tests knowledge of mathematical facts, the ability to work out square roots, factors, prime factors, and to understand binary form.

Primary phases or lower ability classes can attempt the easy and medium level questions whilst KS 3 & 4 classes will be able to try the harder questions. There are points available for answers, with a maximum score of 22 points.

Solution

Easy – One point each

100 pence = **£1**

100cm = **1 metre**

100 years = **1 century**

The total amount = **100%**

Medium – Two points each

What letter represents 100 in Roman Numerals? **C**

$\sqrt{100} =$ **10**

True or false; the sum of the first nine prime numbers is 100? **True**

$2 + 3 + 5 + 7 + 11 + 13 + 17 + 19 + 23 =$ **100**

Hard – Three points each

Find all the factors of 100 - **1,2,4,5,10,20,25,50,100**

Show the prime factors of 100 - **$2 \times 2 \times 5 \times 5$**

Show the prime factors of 100 in exponential form - **$2^2 \times 5^2$**

Show the number 100 in binary form - **1100100**



Wheelzr'us

Teacher Notes

Strand: Number

Group: Written Methods of Calculation

Suggested Age: 7 - 12

Pupils may notice that the number of Trikes must go up in 2's as 3 wheels is an odd number and cannot be replaced by a bike which has an even number of wheels.

There are many solutions

Younger pupils may only find one solution, but older pupils should be encouraged to find other solutions and look for patterns in terms of the trikes being in 2's.

Young children could be prompted to start with 30 bikes or 20 trikes

Solution

Number of Bikes	Number of Trikes	Bike Wheels	Trike Wheels	Total
30	0	60	0	60
27	2	54	6	60
24	4	48	12	60

etc...



Farmer Bob Goes To Market

Teacher Notes

Strand: Number

Group: Proportional Reasoning

Suggested Age: 8+

In this activity students will use problem solving skills to get to the solution. They will have to be able to think a move or two ahead and use logical reasoning to get the number of sacks of grain. They should be aware that it is the minimum number of grain sacks they are looking for. Students should remember they need one of each animal to take home.

Solution

Answer = 16

For 1 cow Farmer Bob needs to exchange goats and grain to get 5 piglets.

This means he needs 2 goats and 4 sacks of grain = 6 piglets (5 for a cow and 1 to take home).

Since he only takes grain to the market he needs 8 sacks for 2 goats.

This is a total of 12 sacks of grain for 1 cow and the 1 piglet left over.

To bring a goat home Farmer Bob will need another 4 sacks of grain.

Hence, Farmer Bob will need to bring at least 16 sacks of grain to the market.

Four 4s

Teacher Notes

Strand: Number

Group: Numbers and the Number System & Mental Methods of Mental Calculation

Suggested Age: 8 and up

This is an activity that practices order of operation and calculation, along with logical thinking and reasoning

Solution

wikipedia.org/wiki/four_fours#solutions

How Low Can You Go?

Teacher Notes

Strand: Number

Group: Numbers and the Number System

Suggested Age: 8 and up

This problem is ideal for pupils to practice their calculations and order of operations. There is also plenty of opportunity for discussion and justification of their solution.

Solution

4

Aircraft Luggage

Teacher Notes

Strand: Number

Group: Mental Methods of Calculation & Written Methods of Calculation

Suggested Age: 9 - 11

This problem requires pupils to recognise they need to find the allowable weight.

They need to consider how 40kg produced a change of £50 and produce the calculation to show what the allowable weight is.

This can then be used to work out the second situation.

Solution

A £50 charge represents 5kg overweight as $5 \times £10 = £50$ charge,
 $40\text{kg} - 5\text{kg} = 35\text{kg}$ for allowable weight.

Therefore $80\text{kg} - 35\text{kg} = 45\text{kg}$ overweight and the passenger would be charged
 $45 \times £10 = £450$



Decimal Disposition

Teacher Notes

Strand: Number

Group: Numbers and The Number System

Suggested Age: 9 - 12

Note – a single digit in each box

Encourage pupils to do some thinking and talking before they start this problem.

Some key prompt questions:

Which are the larger digits?

Which is more important in terms of size, the 1s digit or the 1/10 digit?

There are twelve possible solutions.

Encourage a systematic approach.

You can adapt the content of this problem by:

Removing the decimal point and using 2 digit integers.

Adding a second place of decimals.

Solution

$$\square.\square > \square.\square$$

3 . 7
3 . 8
7 . 2
7 . 3
7 . 8
7 . 8
8 . 2
8 . 2
8 . 3
8 . 3
8 . 7
8 . 7

2 . 8
2 . 7
3 . 8
2 . 8
2 . 3
3 . 2
7 . 3
3 . 7
7 . 2
2 . 7
3 . 2
2 . 3

Teacher Notes

Strand: Number
Group: Number Theory
Suggested Age: 9+

Remind your pupils what factors are.
How do you find factors of a number?
If the number only has 2 factors – what do we call it?

Think about factors of 36.
Write down these factors.
Now Re-read the question - what do we have to find out?

Solution

The factors of 36 are

1, 2, 3, 4, 6, 9, 12, 18, 36

The odd numbers are 3, 9

Only 9 is larger than 5