MathsWatch

Year 9

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Year 9 Maths
Maximise 1

Mathematics
Learning Cycle 1

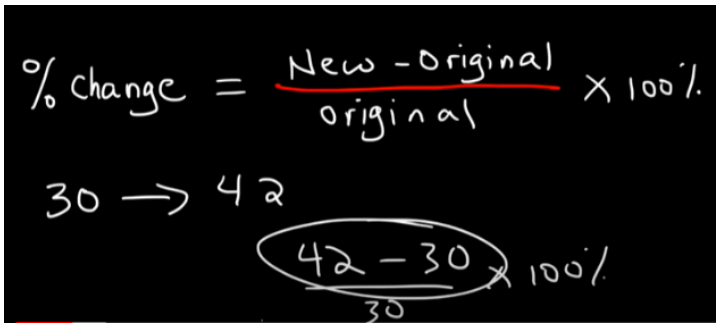
MAXIMISE YOUR POTENTIAL

Year 9

Percentage Change

The table shows how ordinary numbers can be written in standard form. Numbers written in standard form are written as $a \times 10^n$ where n is between 1 and 10.

Ordinary Number	Standard Form
29	2.9×10^1
350	3.50×10^2
4716	4.716×10^3
600000000	6×10^8
0.3	3×10^{-1}
0.09	9×10^{-2}
0.0071	7.1×10^{-3}
0.000502	5.02×10^{-4}



Direct and Inverse Proportion

Statement	Equation
y is proportional to x	$y = kx$
y is proportional to the square of x	$y = kx^2$
y is proportional to x cubed	$y = kx^3$
y is proportional to the square root of x	$y = k\sqrt{x}$

Two quantities are said to be in direct proportion if they increase or decrease in the same ratio. **If two** amounts are **directly proportional** we can scale the **quantities** up by multiplying.

Two quantities are said to be in in inverse proportion if one quantity increases at the same rate that the other quantity decreases.

Statement	Equation
y is inversely proportional to x	$y = \frac{k}{x}$
y is inversely proportional to the square of x	$y = \frac{k}{x^2}$
y is inversely proportional to x cubed	$y = \frac{k}{x^3}$
y is inversely proportional to the square root of x	$y = \frac{k}{\sqrt{x}}$

Write each recurring decimal as a simplified fraction:

1) $0.\dot{6}\dot{3}$ $\frac{63}{99} = \frac{7}{11}$

2) $0.0\dot{6}\dot{3}$ $\frac{63}{990} = \frac{7}{110}$

3) $6.\dot{3}\dot{6}$ $6\frac{36}{99} = 6\frac{4}{11}$

4) $0.4\dot{3}\dot{6}$ $\frac{432}{990} = \frac{24}{55}$

Let $x = 0.4\dot{6}$
$100x = 46.4\dot{6}$
$99x = 46$
$x = \frac{46}{99}$

5) Prove that $0.4\dot{6} = 46/99$

6) Hence express $0.3\dot{4}\dot{6}$ as a fraction. $\frac{3}{10} + \frac{46}{990} = \frac{343}{990}$

Answers

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Say it like a mathematician

Year 9 Maths Maximise 1

INDICES - Written as a small number to its upper right. • the small number is called an exponent, index, power or order, e.g. $10 \times 10 \times 10 \times 10 = 10^4$

INTEREST- interest is a fee paid for borrowing money or other assets

DEPRECIATION-a decrease in the value of something over time

CONSTANT- a quantity having a fixed value that does not. change or vary

VARIABLE- a quantity that can change or vary, taking on different values

SCALE FACTOR- the number used to multiply one object by to get another object that looks the same but is a different size