Index Laws

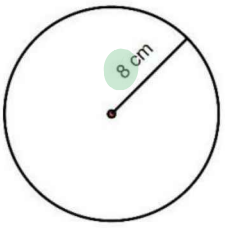
$x^4 \times x^2 =$ x^6

$x^4 \div x^2 =$ x^2

$(x^4)^3 =$ x^{12}

$x^4 \times x^3 \div x^2 =$ x^5

Area and Circumference

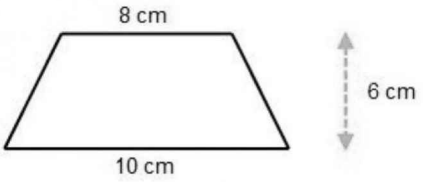


Area = $\pi \times 8^2 = 64\pi cm^2$

Circumference = $\pi \times 8 \times 2 = 16\pi cm$

Give your answers in terms of π

Area of a Trapezium



Area = $\frac{1}{2}(8+10) \times 6$

$= 9 \times 6 = 54cm^2$

Reverse Percentages

A TV is reduced by 20% in a sale. The reduced price is £480.

What is the original price?

80% = 480 ÷8

10% = 60 ×10

100% = £600

Solving Linear Equations

Solve:

3x + 5 = 5x - 9

$5x - 9 = 3x + 5$

$2x - 9 = 5$

$2x = 14$

$x = 7$

Write as a fraction

0.2 = $\frac{2}{10} = \frac{1}{5}$

0.37 = $\frac{37}{100}$

0.092 = $\frac{92}{1000} = \frac{23}{250}$

12% = $\frac{12}{100} = \frac{3}{25}$

3% = $\frac{3}{100}$

Quadratics

Expand: (x + 5) (x + 3)

$x^2 + 8x + 15$

Factorise and solve:

$x^2 - 4x - 45 = 0$

$(x - 9)(x + 5) = 0$

$x = 9$ or $x = -5$

Worded Question

Tanya needs to buy chocolate bars for 130 children.

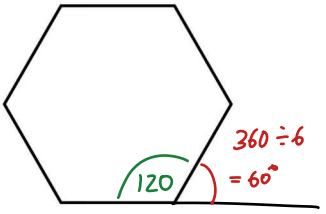
There are 8 chocolate bars in each packet.

Work out the least number of packets of chocolate bars that Tanya needs to buy.

130 ÷ 8 = 16.25

17

Interior Angles



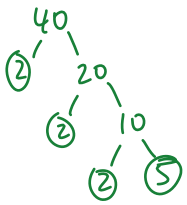
Name the shape = Hexagon

Interior angle = 120°

Exterior angle = 60°

Product of Prime Factors

Write 40 as a product of its prime factors.



$2 \times 2 \times 2 \times 5$

Ratio

Will and Kate share £120 in a 2:3 ratio. (2+3=5)

How much does Kate get?

÷5: 5 parts = 120 ÷5: 1 part = 24 ×3: 3 parts = 72

£72

Changing the Subject

Make m the subject of the equation:

$n = 3m + 2p$

$3m + 2p = n$

$3m = n - 2p$

$m = \frac{n - 2p}{3}$

Error Intervals

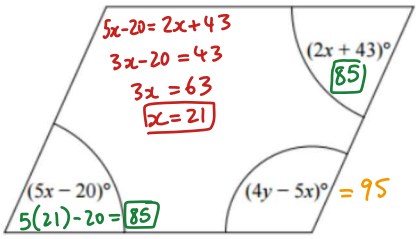
A number y is rounded to 2 decimal places.

The result is 1.27
Write down the error interval for y

1.265 ≤ y < 1.275

Forming Equations

Here is a parallelogram



Work out the value of x and y.

4y - 5(21) = 95
4y = 200
y = 50

Sequences

2, 7, 12, 17, 22,...
(+5, +5, +5)

What is the nth term?

5n - 3

Is 137 a term of this sequence?

5n - 3 = 137
5n = 140
n = 28
Yes. The 28th term.

Sin Values

Sin(0°) = 0

Sin(30°) = ½

Sin(45°) = $\frac{\sqrt{2}}{2}$

Sin(60°) = $\frac{\sqrt{3}}{2}$

Sin(90°) = 1

Proportion

Ingredients to make **16** gingerbread men

(8)		(24)
90	180 g flour	270g
20	40 g ginger	60g
55	110 g butter	165g
15	30 g sugar	45g

What are the ingredients for 24 gingerbread men?

Simultaneous Equations

Solve the simultaneous equations

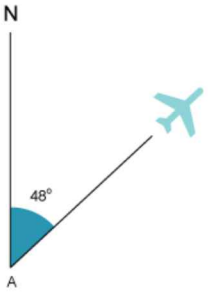
(5x) 3x + 2y = 4

(2x) 4x + 5y = 17

15x + 10y = 20
8x + 10y = 34
7x = -14
x = -2

3(-2) + 2y = 4
-6 + 2y = 4
2y = 10
y = 5

Bearings



What bearing is the plane flying on?

048°

Fractions

1/5 + 5/6 = $\frac{6}{30} + \frac{25}{30} = \frac{31}{30} = 1\frac{1}{30}$

2/9 x 3/7 = $\frac{2 \times 3}{9 \times 7} = \frac{6}{63} = \frac{2}{21}$

2/7 ÷ 3/5 = $\frac{2}{7} \times \frac{5}{3} = \frac{10}{21}$

Inequalities

Solve:

5x - 2 > 3x + 11

2x - 2 > 11

2x > 13

x > 6.5

Standard Form

Write 3400 in standard form.

3.4×10^3

Write 2.367×10^5 as an ordinary number.

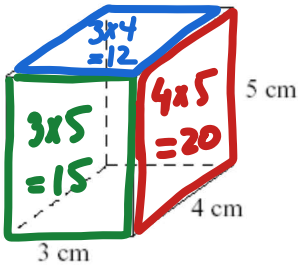
236,700

Probability

What is the probability of spinning a coin twice and getting 'heads' both times?

½ x ½ = ¼

Volume and Surface Area



Volume = 3 x 4 x 5 = 60cm²

Surface Area = (15 + 20 + 12) x 2
= 94cm²