Index Laws

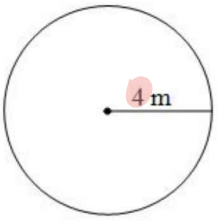
$3x^6 \times 4x^3 =$ $12x^9$

$8x^8 \div 4x^3 =$ $2x^5$

$(7x^5)^2 =$ $49x^{10}$

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

Area and Circumference

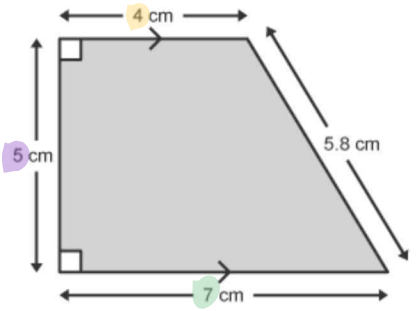


Area = $\pi \times 4^2 = 16\pi cm^2$

Circumference = $2 \times \pi \times 4 = 8\pi cm$

Give your answers in terms of π

Area of a Trapezium



Area = $\frac{1}{2}(4+7) \times 5 = 27.5 cm^2$

Reverse Percentages

Peter answered 80% of the questions in a test correctly.

He answered 32 of the questions correctly.

Work out the total number of questions in the test.

80% = 32 ÷8
10% = 8 x4
100% = 40

Solving Linear Equations

Solve:

$3x + 5 = 5x - 9$

$5x - 9 = 3x + 5$

$2x - 9 = 5$

$2x = 14$

$x = 7$

Write as a Decimal

8% = $\frac{8}{100} = 0.08$

¾ = 0.75

29.4% = 0.294

⅖ = $\frac{2}{5} = \frac{4}{10} = 0.4$

7/20 = $\frac{7}{20} = \frac{35}{100} = 0.35$

Quadratics

Expand: (x - 7) (x - 4)

$x^2 - 11x + 28$

Factorise and solve:

$x^2 - 11x + 30 = 0$

$(x-6)(x-5) = 0$

$x = 6$ $x = 5$

Worded Question

Coffee is sold in 200g jars.

Ben makes 8 cups of coffee a day.

He uses 2g of coffee to make each cup of coffee. $8 \times 2 = 16g$

$16 \times 28 = 448g$

Ben wants to buy enough coffee for 28 days. How many jars of coffee does Ben need to buy?

3 jars

Exterior Angles

A polygon has an exterior angle of 30^0

How many sides does the polygon have?

$\frac{360}{30} = 12$ sides

Product of Prime Factors

Write 108 as a product of its prime factors.

108
2 54
2 27
3 9
3 3

2 x 2 x 3 x 3 x 3

Ratio

Ann = 3x30=90 Bob = 5x30=150

Ann & Bob shared £240 in the ratio 3:5

8 parts = £240
1 part = £30

Ann gave half of her share to Colin. 90 ÷2 = 45

Bob gave a tenth of his share to Colin. 150 ÷ 10 = 15

What fraction of the £240 did Colin receive?

$\frac{45+15}{240} = \frac{1}{4}$

Changing the Subject

Make x the subject of the equation:

$y = \frac{1}{2}x + 3$

$2y = x + 6$

$x = 2y - 6$

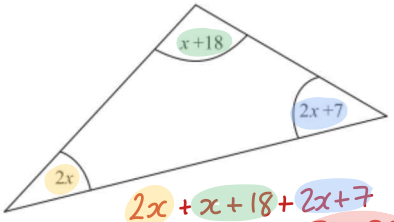
Error Intervals

A number y is rounded to 3 significant figures

The result is 206
Write down the error interval for y

205·5 ≤ y < 206·5

Forming Equations



$2x + x + 18 + 2x + 7 = 5x + 25$

Form an equation in terms of x.

$5x + 25 = 180$

Solve and find the value of x.

$5x + 25 = 180$
$5x = 155$
$x = 31$

Sequences

The nth term of a sequence is:

4n -7

What are the first 5 terms of the sequence?

$4(1) - 7 = -3$
$4(2) - 7 = 1$
$4(3) - 7 = 5$
$4(4) - 7 = 9$
$4(5) - 7 = 13$

Tan Values

Tan(0°) = 0

Tan(30°) = $\frac{1}{\sqrt{3}}$

Tan(45°) = 1

Tan(60°) = $\sqrt{3}$

Proportion

Shortcakes

3	Makes **12** shortcakes		15
12·5	50 g	of sugar	625g
50	200 g	of butter	250g
50	200 g	of flour	250g
2·5	10 ml	of milk	12·5ml

What are the ingredients for 15 shortcakes?

Simultaneous Equations

Solve the simultaneous equations

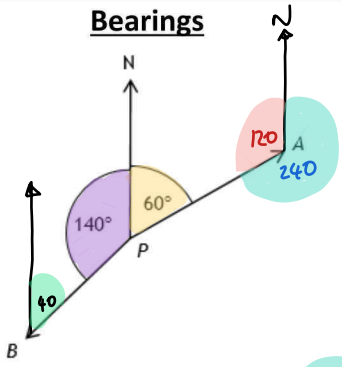
③ x 5x + 2y = 11

② x 4x - 3y = 18

$15x + 6y = 33$
$8x - 6y = 36$
$23x = 69$
$x = 3$

$5(3) + 2y = 11$
$15 + 2y = 11$
$2y = -4$
$y = -2$

Bearings



What is the bearing of P from A? 240°
What is the bearing of P from B? 040°

Mixed Numbers

$5\frac{2}{3} - 2\frac{3}{4}$

$\frac{17}{3} - \frac{11}{4} = \frac{68}{12} - \frac{33}{12} = \frac{35}{12}$

$2\frac{11}{12}$

Inequalities

What are the integer values of x that satisfy:

-2 < x < 4

~~-2~~, -1, 0, 1, 2, 3, ~~4~~

Standard Form

Work out

$(5 \times 10^4) \times (6 \times 10^9)$

30×10^{13}

$= 3 \times 10^{14}$

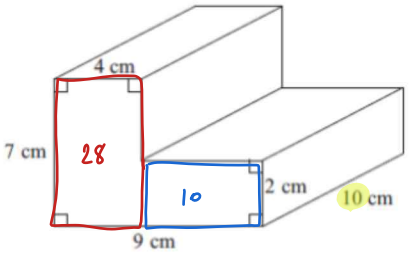
Probability

The probability of it raining is 0.15

What is the probability of it not raining?

$1 - 0.15 = 0.85$

Surface Area



Volume = $(28 + 10) \times 10 = 380 cm^2$

Surface Area = $396 cm^2$