Index Laws

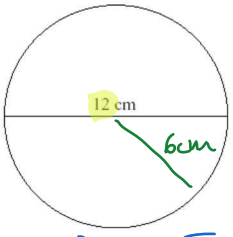
$x^{-2} \times 3x^5 =$ $3x^3$

$x^6 \div x^{-2} =$ x^8

$(2x^2)^3 =$ $8x^6$

$x^5 \times x^4 \div x^{-2} =$ x^{11}

Area and Circumference

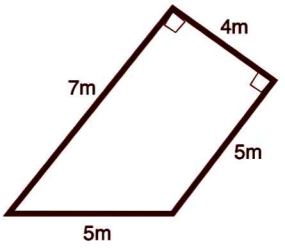


Area = $\pi \times 6^2 = 36\pi cm^2$

Circumference = $\pi \times 12 = 12\pi cm$

Give your answers in terms of π

Area of a Trapezium



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

$6 \times 4 = 24m^2$

Reverse Percentages

110%

John receives a 10% pay rise.
He now earns £660 per week.
What did he earn before his pay rise?

110% = 660 ÷11
10% = 60 ÷11
100% = £600 x10
x10

Solving Linear Equations

Solve:

$3(2x + 2) = 2(x - 7)$

$6x + 6 = 2x - 14$

$4x + 6 = -14$

$4x = -20$

$x = -5$

Write as a percentage

0.9 = $\frac{9}{10} = \frac{90}{100} = 90\%$

0.38 = $\frac{38}{100} = 38\%$

0.092 = $\frac{92}{1000} = \frac{9.2}{100} = 9.2\%$

2/5 = $\frac{2}{5} = \frac{4}{10} = \frac{40}{100} = 40\%$

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

Quadratics

Expand: (x + 4) (x - 6)

$x^2 - 2x - 24$

Factorise and solve:

$x^2 - 3x - 18 = 0$

$(x - 6)(x + 3)$

$x = +6$ $x = -3$

Worded Question

Tracy buys:

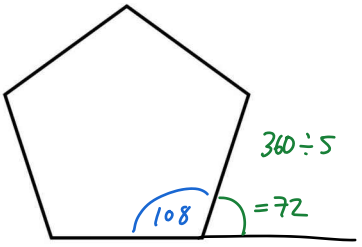
2 coffees at £1.10 each £2.20
3 teas at 95p each £2.85
5 sandwiches at £2.15 each £10.75

Tracy shares the total cost equally between 5 people.

TOTAL = 2.20 + 2.85 + 10.75 = £15.80

How much does each person pay? 15.80 ÷5 = £3.16

Exterior Angles



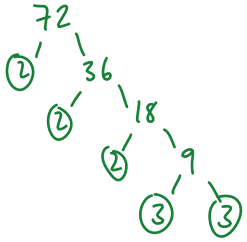
Name the shape = Pentagon

Exterior angle = 72°

Interior Angle = 108°

Product of Prime Factors

Write 72 as a product of its prime factors.



$2 \times 2 \times 2 \times 3 \times 3$

Ratio

Will and Kate share some money in a 5:3 ratio.

+2

Will gets £30 more than Kate.

2 parts more

How much does Kate get?

2 parts = 30 ÷2
1 part = 15 x3
3 parts = £45
÷2 x3

Changing the Subject

Make c the subject of the equation:

$f = 3c - 4$

$3c - 4 = f$

$3c = f + 4$

$c = \frac{f+4}{3}$

Error Intervals

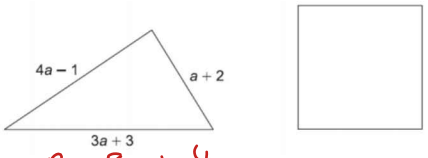
A number y is rounded to 2 decimal places.

The result is 2.75
Write down the error interval for y

2.745 ≤ y < 2.755

Forming Equations

The perimeter of the triangle is the same as the perimeter of the square.



P = 8a + 4

Find an expression for the length of one side of the square in terms of a.
Give your answer in its simplest form.

$\frac{8a+4}{4} = 2a+1$

Sequences

23, 19, 15, 11, 7,...
-4 -4

What is the nth term?

-4n +27

Is 342 in the sequence?

No. The largest number in the sequence is 23.

Cos Values

Cos(0°) = 1

Cos(30°) = $\frac{\sqrt{3}}{2}$

Cos(45°) = $\frac{\sqrt{2}}{2}$

Cos(60°) = 0.5

Cos(90°) = 0

Proportion

Ingredients for 10 Flapjacks	÷2 → 5	×5 → 25
80 g rolled oats	40	200g
60 g butter	30	150g
30 ml golden syrup	15	75g
36 g light brown sugar	18	90g

What are the ingredients for 25 flapjacks?

Simultaneous Equations

Solve the simultaneous equations

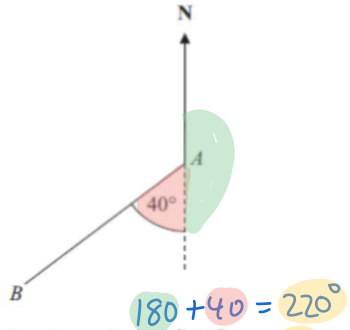
(2x) 3x + 5y = 19

(5x) 4x - 2y = -18

6x + 10y = 38
+ 20x - 10y = -90
26x = -52
x = -2

3(-2) + 5y = 19
-6 + 5y = 19
5y = 25
y = 5

Bearings



What is the bearing of B from A? 180 + 40 = 220°

What is the bearing of A from B? 220° - 180 = 040°

Fractions

3/5 + 1/8 = $\frac{24}{40} + \frac{5}{40} = \frac{29}{40}$

2/11 x 5/7 = $\frac{2 \times 5}{11 \times 7} = \frac{10}{77}$

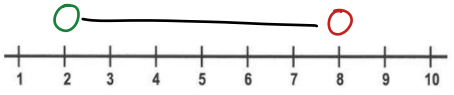
2/9 ÷ 4/7 = $\frac{2}{9} \times \frac{7}{4} = \frac{14}{36} = \frac{7}{18}$

Inequalities

Show the inequality:

2 < x < 8

On the number line



Standard Form

Write 0.0067 in standard form.

6.7×10^{-3}

Write 4×10^{-5} as an ordinary number.

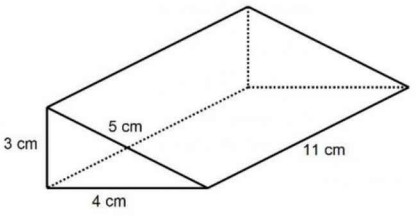
0.00004

Probability

The probability that a biased dice will land on a four is 0.2.
Tom is going to roll the dice 200 times.
Work out an estimate for the number of times the dice will land on a four.

0.2 x 200 = 40

Volume and Surface Area



Volume = $\frac{1}{2} \times 3 \times 4 \times 11 = 66 cm^3$

Surface Area = 44 + 6 + 6 + 33 + 55 = 144 cm^2