A cube has a volume of 64cm³
Calculate the surface area of the cube

$x^3 = 64$
$x = \sqrt{64} = 4$



16 x 6 faces = 96 cm²

$\frac{3}{5}$ of a number is 120
What was the number?

$120 \times \frac{5}{3} = 200$

Write $3\sqrt{18}$ in its simplest form

$\sqrt{18} = \sqrt{9} \times \sqrt{2} = 3\sqrt{2}$
$3\sqrt{18} = 3 \times 3\sqrt{2} = 9\sqrt{2}$

A TV is reduced by 40% in a sale.
The discount is £180.
How much did the TV originally cost?

÷4 ↓ 40% = 180 ↓ ÷4
10% = 45
×10 ↓ 100% = 450 ↓ ×10

£ 450

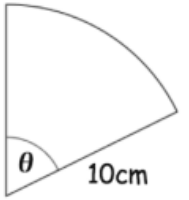
Solutions by
Kenneth Stafford
MATHS TUTOR
ken@kennethstafford.co.uk

A circle has a diameter of 8 cm.
Calculate the area in terms of π



Area = $\pi \times 4^2 = 16\pi$ cm²

The area of the sector is 12.5π cm²
What angle is θ?





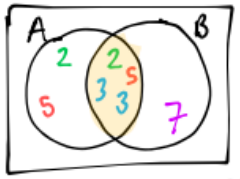
$\frac{12.5\pi}{100\pi} \times 360 = \frac{1}{8} \times 360$
45°

$4\frac{1}{5} + 2\frac{3}{7} = \frac{21}{5} + \frac{17}{7} = \frac{7 \times 21}{7 \times 5} + \frac{17 \times 5}{7 \times 5} = \frac{147}{35} + \frac{85}{35} = \frac{232}{35}$
$= 6\frac{22}{35}$

$2\frac{2}{5} \div 3\frac{1}{3} = \frac{12}{5} \div \frac{10}{3} = \frac{12}{5} \times \frac{3}{10} = \frac{12 \times 3}{5 \times 10} = \frac{36}{50}$
$\frac{18}{25}$

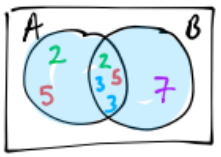
$A = 2^2 \times 3^2 \times 5^2$
$B = 2 \times 3^2 \times 5 \times 7$

Find the HCF of A and B



HCF = $2 \times 3^2 \times 5$
= 90

Find the LCM of A and B



2x5x2x5x3x3x7
LCM = multiply all of them
= 6300

Evaluate $27^{-\frac{1}{3}}$

$\left(\frac{1}{27}\right)^{\frac{1}{3}} = \frac{\sqrt[3]{1}}{\sqrt[3]{27}} = \frac{1}{3}$

Evaluate $\left(\frac{2}{3}\right)^{-2}$

$\left(\frac{3}{2}\right)^2 = \frac{3^2}{2^2} = \frac{9}{4}$

Evaluate $\left(\frac{81}{16}\right)^{\frac{3}{4}}$

$\left(\frac{\sqrt[4]{81}}{\sqrt[4]{16}}\right)^3 = \left(\frac{3}{2}\right)^3 = \frac{27}{8}$

Evaluate $\left(\frac{25}{64}\right)^{-\frac{3}{2}}$

$\left(\frac{64}{25}\right)^{\frac{3}{2}} = \left(\frac{\sqrt{64}}{\sqrt{25}}\right)^3 = \left(\frac{8}{5}\right)^3 = \frac{512}{125}$

$y = -\frac{4}{7}x + 8$

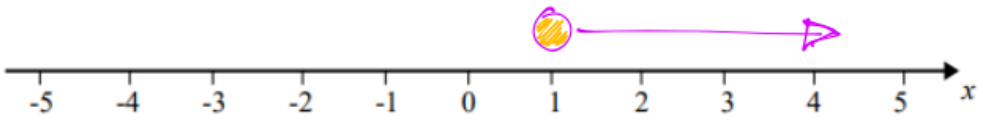
Can be any number.

Equation of a line that is parallel $y = -\frac{4}{7}x + 10$

Equation of a line that is perpendicular $y = \frac{7}{4}x + 10$

On the number line show the inequality $-x \leq 1$

$x \geq 1$



$-1 \leq 2y + 3 < 10$ where y is an integer.
Write down all the possible values of y.

$-4 \leq 2y < 7$

$-2 \leq y < 3.5$

.....-2, -1, 0, 1, 2, 3.....

Solve $2(3x + 5) < 8x + 4$

$6x + 10 < 8x + 4$

$10 < 2x + 4$

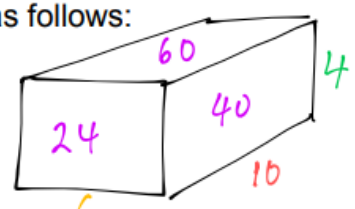
$6 < 2x$

$3 < x$ or $x > 3$

.....

The dimensions of a cuboid are given as follows:

Length = 10 m
Width = 4 m
Height = 6 m



What is the total surface area of the cuboid?

$(60 + 40 + 24) \times 2 = 124 \times 2 = 248$

.....248 cm^2.....

Write $\frac{x^2 + 7x - 18}{2x^2 - x - 6}$ in the form $\frac{x + a}{bx + c}$ where a, b and c are integers

$\frac{(x+9)(x-2)}{(2x+3)(x-2)}$

$\frac{x+9}{2x+3}$

Solve $\frac{8}{x+3} + \frac{3}{x+8} = 1$

$\frac{8(x+8) + 3(x+3)}{(x+3)(x+8)} = 1$

$8x + 64 + 3x + 9 = (x+3)(x+8)$

$11x + 73 = x^2 + 11x + 24$

$0 = x^2 - 49$

$0 = (x+7)(x-7)$

$x = 7$ or -7

Work out the value of $(5 \times 10^3) \times (6 \times 10^7)$

Give your answer in standard form.

$5 \times 6 \times 10^3 \times 10^7 = 30 \times 10^{3+7} = 30 \times 10^{10}$

$= 3 \times 10^{11}$

.....

Work out $\frac{7.5 \times 10^6}{2.5 \times 10^{-3}}$

$= (7.5 \div 2.5) \times (10^6 \div 10^{-3})$

Give your answer in standard form.

$= 3 \times 10^{6 - -3}$

3×10^9

.....