Daily Practice 15.11.2017

Solve the following equations

(a) $3x + 7 = 32 - 2x$

$5x = 25$

$x = 5$

(b) $5(2k - 4) + 1 = 3(2k - 1)$

$10k - 20 + 1 = 6k - 3$

$10k - 19 = 6k - 3$

$4k = 16$

$k = 4$

(c) $4(m - 2) - 9 = 3 - (m + 5)$

$4m - 8 - 9 = 3 - m - 5$

$4m - 17 = -m - 2$

$5m = 15$

$m = 3$

(d) $5(2h + 3) = 4(2h + 1) + 15$

$10h + 15 = 8h + 4 + 15$

$10h + 15 = 8h + 19$

$2h = 4$

$h = 2$

(e) $3(j - 1) = 18 - 5(j + 1)$

$3j - 3 = 18 - 5j - 5$

$3j - 3 = 13 - 5j$

$8j = 16$

$j = 2$

(f) $3(5t + 7) + 2(3t - 5) = 5(2t + 11)$

$15t + 21 + 6t - 10 = 10t + 55$

$21t + 11 = 10t + 55$

$11t = 44$

$t = 4$

Today we will be learning to solve equations with fractions.

Equations with Fractions

$$\frac{x+3}{2} = 5$$

$$\frac{1}{2} + \frac{x+3}{2} = 5$$

$$\frac{x+4}{2} + \frac{x+6}{2} = 3$$

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

Equations with Fractions

Examples: Solve the following

1. $\frac{3k-1}{4} = 8$

2. $\frac{m+2}{4} + \frac{m-3}{2} = \frac{1}{2}$

Daily Practice 16.11.2017

Q1. Solve the equation $\frac{x+3}{2} - 7 = -3$

$x + 3 - 14 = -6$

$x - 11 = -6$

$x = 5$

Q2. Write the number 5 000 000 in scientific notation

$5 \times 10^6$

Q3. Calculate the size of the internal angle of a pentagon

$360° \div 5 = 72°$

$180° - 72° = 108°$

Q4. Simplify $\frac{2k^2 \times 3k^5 \times 8}{24k^3}$

$= \frac{6k^7 \times 8}{24k^3} = \frac{48k^7}{24k^3} = 2k^4$

Q5. Write with a positive index $3k^{-2}$

$= \frac{3}{k^2}$

Today we will be continuing to practise solving equations with fractions.

## Equations with Fractions

Equations4.pdf

Questions: Solve the following

(a) $\frac{d}{2}=3$

(b) $\frac{2t}{3}=4$

(c) $\frac{8h+2}{7}=6$

(d) $\frac{k+5}{2}=7$

(e) $\frac{5(2g+1)}{5}=9$

(f) $\frac{2f-5}{3}=\frac{f-2}{3}$

(g) $\frac{3g}{4}-\frac{5g}{8}=\frac{1}{2}$

(h) $\frac{p-3}{6}=\frac{p}{5}-\frac{3}{2}$

(i) $\frac{3h-1}{6}-\frac{h-3}{4}=\frac{4}{3}$

(j) $\frac{2k-1}{3}-\frac{k}{4}=\frac{6}{4}$

(k) $\frac{c-2}{3}+\frac{c-3}{4}=\frac{c-1}{2}$

(l) $\frac{2t-3}{5}+\frac{1}{20}=\frac{t-1}{4}$

## Equations with Fractions

Equations4.pdf

Questions: Solve the following

(a) $\frac{d}{2}=3$ $d=6$

(b) $\frac{2t}{3}=4$ $2t=12$ $t=6$

(c) $\frac{8h+2}{7}=6$ $8h+2=42$ $8h=40$ $h=5$

(d) $\frac{k+5}{2}=7$ $k+5=14$ $k=9$

(e) $\frac{5(2g+1)}{5}=9$ $10g+5=45$ $10g=40$ $g=4$

(f) $\frac{2f-5}{3}=\frac{f-2}{3}$ $2f-5=f-2$ $f=3$

(g) $\frac{3g}{4}-\frac{5g}{8}=\frac{1}{2}$ $6g-5g=4$ $g=4$

(h) $\frac{p-3}{6}=\frac{p}{5}-\frac{3}{2}$ $5p-15=6p-45$ $p=30$

(i) $\frac{3h-1}{6}-\frac{h-3}{4}=\frac{4}{3}$ $6h-2-3h+9=16$ $3h=9$ $h=3$

(j) $\frac{2k-1}{3}-\frac{k}{4}=\frac{6}{4}$ $8k-4-3k=18$ $5k=22$ $k=4.4$

(k) $\frac{c-2}{3}+\frac{c-3}{4}=\frac{c-1}{2}$ $4c-8+3c-9=6c-6$ $c=11$

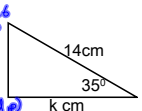
(l) $\frac{2t-3}{5}+\frac{1}{20}=\frac{t-1}{4}$ $8t-12+1=5t-5$ $3t=6$ $t=2$

## Daily Practice 17.11.2017

Q1. Solve the equation 4(2x - 1) + 5x = 3x + 26

$8x-4+5x=3x+26$ $13x=3x+30$ $10x=30$ $x=3$

Q2. Calculate the length of k




$\cos x^\circ=\frac{A}{H}$ $\cos 35^\circ=\frac{k}{14}$ $k=14\cos 35^\circ=11.47\text{cm}$ (2d.p.)

Q3. Calculate the mean, median, mode and range of

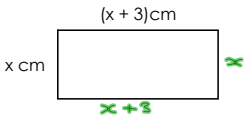
-3, 7, 4, 13, 5, 11, 6, 7

Mean $=\frac{50}{8}=6.25$ (2d.p.)

Median $=6.5$ Mode $=7$ Range $=13-(-3)=16$

Today we will be learning how to use algebra to create expressions and equations for questions in context.

## Problem Solving using Algebra



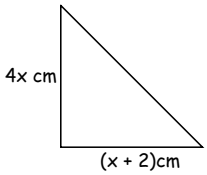

(i) Write an expression for the perimeter

$2x+2(x+3)$ $2x+2x+6$ $4x+6$

(ii) If the perimeter is 22cm, what is the value of x?

$4x+6=22$ $4x=16$ $x=4\text{cm}$

## Problem Solving using Algebra



Problem Solving with Equations

Examples:

Andy buys k packets of crisps. Laura buys 2 more packets of crisps than Andy.

a. Write an expression for the total number of packets of crisps.

k + k+2

Total = 2k+2

b. There were 14 packets of crisps bought altogether. How many did Andy buy?

2k+2=14
2k=12
k=6

Andy = 6 packets
Laura = 8 packets

c. Each packet of crisps cost 60p. How much did they each spend?

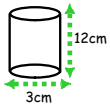
Laura = 8 x 60p = £4·80
Andy = 6 x 60p = £3·60

Daily Practice 20.11.2017

Q1. Calculate the volume of the cylinder shown. Round your answer to 2 significant figures

$V = \pi r^2 h$

$V = 1.5^2 \times \pi \times 12 = 84.82 cm^3$
$\rightarrow 85 cm^3$ (2sf)




Q2. Write 0.000817 in scientific notation

$8.17 \times 10^{-4}$

Q3. Find the value of a house that was bought for £163 000 and appreciated in value by 5%

10% = 16300
5% = 8150
163000 + 8150 = £171150

Q4. $2\frac{1}{6} \times \frac{1}{8} = \frac{13}{6} \times \frac{1}{8} = \frac{13}{48}$

Today we will be learning how to solve equations from questions in context.

Homework due!

Problem Solving with Equations

Sarah buys a necklace and a pair of earrings. The necklace costs £35 more than the pair of earrings. Sarah paid £81 for both items. How much did each item cost?

Let x = cost of earrings
cost of necklace = x + 35

x + (x+35) = 81
2x + 35 = 81
2x = 46
x = 23

earrings = £23
necklace = £23+35 = £58

A newsagent sells football cards.
The cards can be bought in packs or individually.

Christiano buys 5 packs of cards and 8 individual cards.
Carlos buys 2 packs of cards and 26 individual cards.

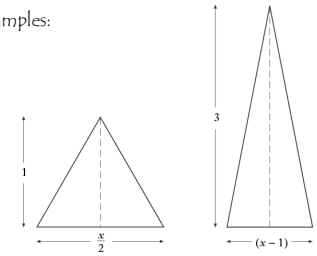
If Christiano and Carlos have the same number of cards,
How many are in a pack?

Let p = no. of cards in a pack

5p + 8 = 2p + 26
3p + 8 = 26
3p = 18
p = 6

Problem Solving with Equations

Examples:




The triangles are equal in area.

**Calculate** the value of $x$.

Daily Practice 22.11.2017

Q1. Solve the equation $3(2x + 1) - 5x = 3$

$6x + 3 - 5x = 3$

$x + 3 = 3$

$x = 0$

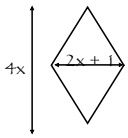
Q2. Round 81.447 to 2 significant figures

→ 81

Q3. $2\frac{3}{4} - \frac{6}{7} = \frac{11}{4} - \frac{6}{7}$

$\frac{77}{28} - \frac{24}{28} = \frac{53}{28} = 1\frac{25}{28}$

Q4. Write an expression for the area of the rhombus shown




$A = \frac{1}{2}(\text{product of diagonals})$

$\frac{1}{2}(4x)(2x+1)$

$2x(2x+1)$

Today we will be learning how to solve inequalities.

Inequalities

From left to right:

- $<$ less than
- $>$ greater than
- $\leq$ less than or equal to
- $\geq$ greater than or equal to

"means greater than or equal to"

Inequalities

Write expressions for the following:

x is less than 6 $x < 6$

y is greater than -15 $y > -15$

k is greater than or equal to 0 $k \geq 0$

h is greater than or equal to -4 and is less than 7 $-4 \leq h < 7$

p is greater than -1 and is less than or equal to 4 $-1 < p \leq 4$

j lies between -3 and 5 but isn't -3 or 5 $-3 < j < 5$

$h \geq -4$

$h < 7$

Solving Inequalities

Solving inequalities follows the same process as solving equations.

Examples: Solve the following

(a) $5x - 4 > 26$

$5x > 30$

$x > 6$

(b) $9 - 3a < 12$

$-3a < 3$

$0 < 3a + 3$

$-3 < 3a$

$-1 < a$

$a > -1$

* Dividing by a negative reverses the inequality sign *

(c) $2(c + 5) - 1 \geq 3$

$2c + 10 - 1 \geq 3$

$2c + 9 \geq 3$

$2c \geq -6$

$c \geq -3$

(d) $2(4b - 7) \leq 3b - 14$

$8b - 14 \leq 3b - 14$

$8b \leq 3b$

$5b \leq 0$

$b \leq 0$

(e) $2x - 5 < 4x + 7$

$2x < 4x + 12$

$-2x < 12$

$x > -6$

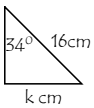
$-6 < x$

Daily Practice 23.11.2017

Q1. Multiply out and simplify 2(3x – 4) + 5x

Q2. Calculate the mean, median, mode and range of 2, 4, 2, -5, 8, 6 and 3

Q3. Calculate the length of the side k




Q4. Rearrange the formula $V = \frac{1}{3}\pi r^2 h$ such that 'r' is the subject

Today we will be continuing to work on inequalities.

Questions

Solve the following

1. 3a - 6 ≤ 12
2. 4b + 2 > 2b + 10
3. 48 < 7x + 13
4. 2x + 8 ≥ 20 - 2x
5. 18 > 3(x - 2)
6. 5x + 21 ≥ 2(4x + 3)
7. 6(2x - 7) ≤ 2(x + 4)
8. 9(3x + 1) > 12(2x + 1)
9. 11 - (1 - j) ≥ -2
10. 2(m + 1) + 5 > 25
11. 4(x - 2) ≤ 3x - 4
12. $\frac{1}{3}$ - 2x > $\frac{25}{3}$
13. $2 < \frac{5x-6}{2}$
14. $-\frac{7}{2} \leq \frac{3x-1}{2}$
15. $4x - \frac{1}{2} \leq \frac{5x}{2} - 5$

Questions

1. $3a - 6 \leq 12$ $a \leq 6$
2. $4b + 2 > 2b + 10$ $b > 4$
3. $48 < 7x + 13$ $5 < x$ $x > 5$
4. $2x + 8 \geq 20 - 2x$ $x \geq 3$
5. $18 > 3(x - 2)$ $18 > 3x - 6$ $24 > 3x$ $x < 8$
6. $5x + 21 \geq 2(4x + 3)$ $15 \geq 3x$ $x \leq 5$
7. $6(2x - 7) \leq 2(x + 4)$ $12x - 42 \leq 2x + 8$ $10x \leq 50$ $x \leq 5$
8. $9(3x + 1) > 12(2x + 1)$ $27x + 9 > 24x + 12$ $3x > 3$ $x > 1$
9. $11 - (1 - j) \geq -2$ $11 - 1 + j \geq -2$ $10 + j \geq -2$ $j \geq -12$
10. $2(m + 1) + 5 > 25$ $2m + 2 + 5 > 25$ $2m + 7 > 25$ $2m > 18$ $m > 9$

Daily Practice 24.11.2017

20 Questions Mental Maths

Today we will be completing a check-up on equations.

Problem Solving with Equations

Examples:

EquationsProblems.pdf

3.

A new fraction is obtained by adding $x$ to the numerator and denominator of the fraction $\frac{17}{24}$.

This new fraction is equivalent to $\frac{2}{3}$.

Calculate the value of $x$.

$\frac{17+x}{24+x} = \frac{2}{3}$

Daily Practice 24.11.2016

Q1. Find the original value of a car that depreciated by 7% and is is now worth £3650

Q2. Solve the equation 6(3x - 1) = 12(x + 1)

Q3. State the median and quartiles of the data set

-2 5 7 9 12 13

## Attachments

Equations4.pdf

EquationsProblems.pdf