Daily Practice   2.10.15
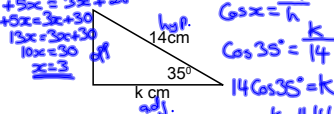
Q1. Solve the equation $4(2x - 1) + 5x = 3x + 26$

(handwritten):
$8x - 4 + 5x = 3x + 26$
$8x + 5x = 3x + 30$
$13x = 3x + 30$
$10x = 30$
$x = 3$

Q2. Calculate the length of k

(handwritten, triangle with 14cm, 35°, k cm):
hyp.
$\cos x = \frac{a}{h}$
$\cos 35° = \frac{k}{14}$
adj.
$14 \cos 35° = k$
$k = 11.46$ cm

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

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

(handwritten):
-3 4 5 6 7 7 11 13
mode = 7
Range = 13 - (-3) = 16
mean = $\frac{50}{8}$ = $\frac{50}{8}$ = 6.25
median = $\frac{6+7}{2}$ = 6.5

Q4. Write a simplified expression for the perimeter of the rectangle shown

x cm   (x + 3)cm

(handwritten):
$P = x+3 + x+3 + x + x$
$P = 4x + 6$

Equations with Fractions

Q1. Equations revision: Solve the following equations

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

(handwritten):
$-7 \quad -7$
$3x = 25 - 2x$
$+2x \quad +2x$
$\frac{5x = 25}{\div 5 \quad \div 5}$ $x = 5$

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

(handwritten):
$10h + 15 = 8h + 4 + 15$
$10h + 15 = 8h + 19$
$2h = 4$
$h = 2$

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

(handwritten):
$10k - 20 + 1 = 6k - 3$
$10k - 19 = 6k - 3$
$4k = 16$
$k = 4$

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

(handwritten):
$3j - 3 = 18 - 5j - 5$
$8j = 16$
$j = 2$

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

(handwritten):
$4m - 8 - 9 = 3 - m - 5$
$4m - 17 = -m - 2$
$5m = 15$
$m = 3$

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

(handwritten):
$15t + 21 + 6t - 10 = 10t + 55$
$21t + 11 = 10t + 55$
$11t = 44$
$t = 4$

Q2. Make up 5 equations that are solvable

Today we will be continuing to solve equations with fractions.

Today we will be learning to solve equations with fractions.

Daily Practice   5.10.2015

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

(cylinder: 12cm height, 3cm)
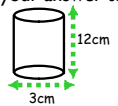
Q2. Write 0.000817 in scientific notation

Q3. Find the value of a house that was bought for £63 000 and appreciated in value by 5% per year for 4 years.

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

Equations with Fractions

Given an equation with a fraction in it, always try to get rid of the fraction first by multiplying both sides by the denominator of the fraction.

If there are 2 fractions, multiply both sides by the common denominator (LCM of both denominaors) of both fractions.

Equations with Fractions

Examples: Solve the following

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

$\times 4 \qquad \times 4$

$3k-1=32$
$\quad +1 \quad +1$
$3k=33$
$\div 3 \quad \div 3$
$k=11$

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

$\times 4 \qquad\qquad \times 4$

$m+2+2(m-3)=2$
$m+2+2m-6=2$
$3m-4=2$
$\quad +4 \quad +4$
$3m=6$
$\div 3 \quad \div 3$
$m=2$

Equations with Fractions

Questions: Solve the following

Equations4.pdf

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

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

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

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

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

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

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

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

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

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

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

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

Daily Practice   6.10.2015

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

$\times 2 \qquad\qquad \times 2$

$x+3-14=-6$
$x-11=-6$
$x=5$

Q2. If f(x) = 2x² + 3, what is the value of f(-2)?

$f(-2)=2(-2)^2+3=8+3=11$

Q3. Write the number 5 000 000 in scientific notation

5×10^{6}

Q4. Calculate the size of the internal angle of a pentagon

$360\div 5=72°$

$180°-72°=108°$

Q5. If two bottles are similar in size, the volume of the smaller bottle is 330ml and the diameter of the base is 5cm, calculate the volume of the larger bottle if the diameter of the base is 6.5cm

$S.f.=6.5\div 5=1.3$
$V.s.f=(1.3)^3$
$330\times(1.3)^3=725.01mL$

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

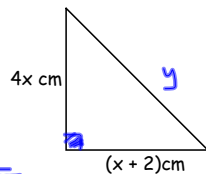Problem Solving using Algebra $6\cdot 10\cdot 15$

Example:

Write down an expression for the perimeter and the area of the triangle shown

Perimeter =
$= 4x+x+2+y$
$= 5x+2+y$

$4x$ cm y

$(x+2)$cm

Area $=\frac{1}{2}(b\times h)$
$=\frac{1}{2}(x+2)(4x)$
$=\frac{1}{2}(4x^2+8x)$
$=2x^2+4x$

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Daily Practice   7.10.2015

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

$6x+3-5x=x+3$
$x+3=x+3$
$x=x$

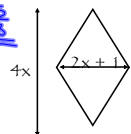Q2. Round 81.447 to 2 significant figures

$\rightarrow 81$

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

$4x$ $2x+1$

$A=\frac{1}{2}(d_1\times d_2)$
$=\frac{1}{2}(2x+1)(4x)$
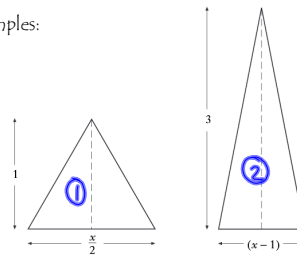$=\frac{8x^2+4x}{2}=4x^2+2x$

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

Problem Solving with Equations   7·10·15

Examples:

1.

The triangles are equal in area.

Calculate the value of x.

$$Area ① = \frac{1}{2}\left(\frac{x}{2} \times 1\right)$$
$$= \frac{1}{2}\left(\frac{x}{2}\right) = \frac{x}{4}$$

$$Area ② = \frac{1}{2}(x-1)(3)$$
$$= \frac{1}{2}(3x-3)$$

$$\frac{x}{4} = \frac{3x-3}{2}$$

$$x = 2(3x-3)$$
$$x = 6x - 6$$
$$-5x = -6$$
$$x = \frac{6}{5} \text{ or } 1\frac{1}{5}$$

Examples:

2) 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.

$$k + k + 2$$
$$2k + 2$$

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

$$2k + 2 = 14$$
$$-2 \qquad -2$$
$$2k = 12$$
$$k = 6$$

Andy bought 6 packets

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

60p × 6 = £3.60 Andy   60p × 8 = £4.80 Laura

Daily Practice   9.10.15

Q1. Multiply out and simplify 3(2x + 4) - 18x + 3

$$6x + 12 - 18x + 3$$
$$-12x + 15$$

Q2. Share £120 in the ratio 3:4

$$3 + 4 = 7$$
$$£17.14 \quad \times 3 = £51.43$$
$$7\overline{)120} \qquad 17.14 \times 4 = £68.57$$

Q3. -17 + 2 x 6

$$-17 + 12$$
$$= -5$$

Q4. Find the value of a house that was worth £180 000 and
appreciates by 2% per annum for 3 years

$$100\% + 2\% = 102\% = 1.02$$
$$180\,000 \times 1.02^3$$
$$= £191\,017.44$$

Q5. Solve $\dfrac{x+3}{2} - 4 = 6$

$$\times 2 \qquad \times 2$$
$$x + 3 - 8 = 12$$
$$x + 3 = 20$$
$$x = 17$$

Today we will be continuing to work out

problem solving questions.

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.

<u>Daily Practice</u>   21.10.2015

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

$93\% = 3650$
$1\% = 39.25$
$100\% = £3924.73$

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

$18x - 6 = 12x + 12$
$6x - 6 = 12$
$6x = 18$ $x = 3$

Q3. State the median and quartiles of the data set

-2   (5)   7 | 9   (12)   13

Median $= \frac{7+9}{2} = 8$ $Q_1 = 5$
$= Q_2$ $Q_3 = 12$

Today we will be learning how to solve inequalities.

Homework Online due Monday 26.10.15

<u>Inequalities</u>   21.10.15

From left to right:

$<$

$>$

$\leq$

$\geq$

<u>Inequalities</u>

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

$-3 < j < 5$

<u>Solving Inequalities</u>

Solving inequalities follows the same process as solving equations.

Examples: Solve the following

(a) $5x - 4 > 26$
$5x > 30$
$x > 6$

(b) $9 - 3a < 12$
$-3a < 3$
$\div 3$ $\div 3$
$a > -1$
$\div$ by negative inequality sign is reversed.

(c) $2(c + 5) - 1 \geq 3$
$2c + 10 - 1 \geq 3$
$2c + 9 \geq 3$
$2c \geq -6$
$c \geq -3$ ⭐

(d) $2(4b - 7) \leq 3b - 14$
$8b - 14 \leq 3b - 14$
$8b \leq 3b$
$5b \leq 0$
$b \leq 0$

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   23.10.2015

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

$6x - 8 + 5x$

$11x - 8$

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

$-5, 2, 2, ③, 4, 6, 8$
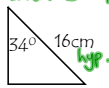
$Mean = \dfrac{20}{7} = 2.86$ $Mode = 2$ $Median = 3$ $Range = 8 - (-5)$ $= 13$

Q3. Calculate the length of the side k

$34° \quad 16cm \; hyp.$

$Sinx° = \dfrac{o}{h}$ ⇒ $Sin34° = \dfrac{k}{16}$

$16 \times Sin34° = k$ $k = 8.95cm$ k cm   opp

Q4. If two cylinders are similar in size and the smaller cylinder has a volume of 280ml and a diameter of 16cm, if the larger cylinder has a diameter of 24cm, what is its volume?

$s.f = 24 ÷ 16 = 1.5$

$V.sf. = (1.5)^3 = 3.375$

$280 \times 3.375 = \underline{945mL}$

Success?

I can explain what an inequality is.

I can solve inequalities with unknowns on both sides.

Today we will be completing marking the inequality questions and doing a check-up on inequalities.

Attachments

Equations4.pdf

EquationsProblems.pdf