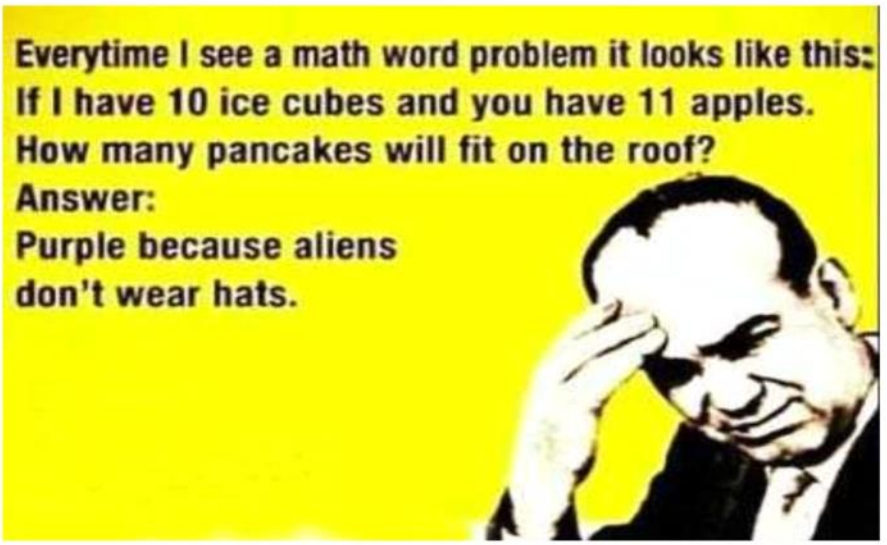
Word Problems



Karlee can ride her bicycle twice as fast as Brooklyn. Brooklyn takes 1 hour longer than Karlee to ride a distance of 24km.

How fast are ~~Amy~~ and ~~Brodie~~ riding their bikes?

Karlee Brooklyn

$d = vt$

$t = \frac{d}{v}$

table

x = Brooklyn's velocity.

	d	v	t
Karlee	24	$2x$	$\frac{24}{2x}$
Brooklyn	24	x	$\frac{24}{x}$

NPV $x \neq 0$

We need to make an equation. LCD $= 2x$

Brooklyn's time = Karlee's time + 1 hour.

$$\frac{24}{x}^{(2x)} = \frac{24}{2x}^{(2x)} + 1^{(2x)}$$

$24(2) = 24 + 2x$

$\frac{24}{2} = x$

$x = 12 \frac{km}{hr.}$

Brooklyn travels at $12 \frac{km}{hr.}$

20 by

Dividing ~~a number~~ by a number gives the same result as dividing 12 by 2 less than the number.

Find the number. → x ←

$$\left(\right)\frac{20}{x} = \frac{12}{x-2}\left(\right)$$

$NPV \Rightarrow x \neq 0, 2$

$20(x-2) = 12x$

$20x - 40 = 12x$

$20x - 12x = 40$

$8x = 40$

$x = \frac{40}{8} = 5$

Dividing 108 by one more than a number gives the same result as dividing 72 by three less than the number.

What is the number? x

$NPV \rightarrow x \neq -1, 3$

$$\frac{108}{x+1} = \frac{72}{x-3}$$

$$(x+1)(x-3)\frac{108}{x+1} = \frac{72}{x-3}(x-3)(x+1)$$

$$108(x-3) = 72(x+1)$$

$$108x - 324 = 72x + 72$$

$$108x - 72x = 72 + 324$$

$$36x = 396$$

$$x = \frac{396}{36}$$

$$x = 11$$

Garrion drove 404km from Edmonton to Banff in the same length of time as Rylan took to drive 364km from Edmonton to Jasper. Garrion drove 10km/hr faster than Rylan.

At what speed did Rylan drive? → x

	v	d	t
Garion	x+10	404	$\frac{404}{x+10}$
Rylan	x	364	$\frac{364}{x}$

$d = vt$

$t_G = t_R$

$t = \frac{d}{v}$

$(x+10)(x)\frac{404}{x+10} = \frac{364}{x}(x)(x+10)$

$404x = 364(x+10)$

$404x = 364x + 3640$

$404x - 364x = 3640$

$40x = 3640$

$x = \frac{3640}{40}$

$= 91 \frac{km}{hr}$

NPV → $x = 0, -10$

Rylan drove at $91 \frac{km}{hr}$.

Two friends share a paper route. Hailey can deliver the papers in 40mins. Mizuki can deliver the same route in 50min.

How long, to the nearest minute, does the paper route take if they work together?

	time (1 min)		
Hailey	40	$\frac{1}{40}$	$\frac{1}{40}(t)$
Mizuki	50	$\frac{1}{50}$	$\frac{1}{50}(t)$
together	t	$\frac{1}{t}$	$\frac{(1)t}{t} = 1$

↳ total
↳ means 1 job is done.

$$\frac{t}{40} + \frac{t}{50} = 1 \quad \text{(200)}$$

$$5t + 4t = 200$$

$$9t = 200$$

$$t = \frac{200}{9} \approx 22 \text{ mins.}$$

HW: pg 349
#12,14,16,17