1. $\frac{x}{4}+\frac{x}{6}=1$

$\frac{x\cdot4\cdot6}{4}+\frac{x\cdot4\cdot6}{6}=1\times4\times6$

$6x+4x=24$

$10x=24$

$x=24$

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

$\frac{x\cdot3\cdot2}{2}+\frac{x\cdot3\cdot2}{3}=1\times2\times3$

$3x+2x=6$

$5x=6$

$x=\frac{6}{5}$

3. $\frac{x}{20}+\frac{x}{30}=1$

$\frac{x\cdot30\cdot20}{20}+\frac{x\cdot30\cdot20}{20}=1\cdot30\cdot20$

$20x+30x=600$

$50x=600$

$x=12$

4a) 

$T=\frac{D}{S}$ if $D=390$

$\frac{390}{120}=3.25$ hours

$=3$ hours 15 mins.

b) 

$S=\frac{D}{T}$ if $T=4$

$\frac{390}{4}=97.5$ km/h

5. a) $A=\frac{2500+1.25n}{n}$

if $n=500$

$A=\frac{2500+1.25\times500}{500}$

$A=\$6.25$

b) if $A=\$8$

$8=\frac{2500+1.25n}{n}$

$8n=2500+1.25n$

$6.75n=2500$

$n=370.37$

but the answer is 371, because you cannot have non-integer value for items.

6. a)

S	T	D
110	2.1	230
110+S	2.1−t	230

$t=\frac{D}{S}$

$2.1-t=\frac{230}{110+S}$

$\frac{230}{110+S}+t=2.1$ $\quad t=2.1-\frac{230}{110+S}$

Δin time

1. $\frac{x}{4}+\frac{x}{6}=1$

$\frac{x}{4}(4\times6)+\frac{x}{6}(4\times6)=1(4\times6)$

$6x+4x=24$

$10x=24$

$x=\frac{24}{10}=\frac{12}{5}$ hr

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

$\frac{x}{2}(2\times3)+\frac{x}{3}(2\times3)=1(2\times3)$

$3x+2x=6$

$5x=6$

$x=\frac{6}{5}$ hr

3. $\frac{x}{30}(20\times30)+\frac{x}{20}(20\times30)=1(20\times30)$

$20x+30x=600$

$50x=600$

$x=12$ min

4. a) $4\frac{1}{3}$ (390/120) $\rightarrow \frac{d}{s}=t$

$=4\frac{1}{3}-\frac{13}{4}$ diff = $\frac{390}{90}-\frac{390}{120}$

$=\frac{13}{3}-\frac{13}{4}$ =

$=\frac{52}{12}-\frac{39}{12}$

$=\frac{13}{12}$ hr

b) $\frac{d}{t}=s$

$\frac{390}{4}=97.5$ km/h

5. a) $A=\frac{2500+1.25(500)}{500}$

$A=\frac{2500+625}{500}$

$A=\frac{3125}{500}$

$A=6.25$

b) $8.00=\frac{2500+1.25n}{n}$

$8n=2500+1.25n$

$8n-1.25n=2500$

$6.75n=2500$

$n=\frac{2500}{6.75}$

$n\simeq370$

6. b) $\frac{230}{110}-\frac{230}{125}$

$=2.1-1.84$

$=0.26$ h (10 min)

c) $\frac{230}{110}-\frac{230}{x}=\frac{1}{6}$

$230(6)(x)-230(110)(6)=1(x)(110)$

$1380x-151800=110x$

$1270x=151800$

$x=\frac{151800}{1270}$

$x=119.5$ km/h

7.

	Distance	Speed	Time
A to B	80 km	S+3	$\frac{80}{S+3}$
B to C	128 km	S	$\frac{128}{S}$

time from A to B − time from B to C = time saved (2 days)

$\frac{128}{S}-\frac{80}{S+3}=48$

$128(S+3)-80S=48S(S+3)$

$128S+384-80S=48S^2+144S$

$0=48S^2-128S+80S+144S-384$

$48S^2+96S-384=0$

$S^2+2S-8=0$

$(x-2)(x+4)=0$

$x=+2$ $\quad x\neq-4$

Speed A to B

b) VANCOUVER → KELOWNA

$S=90$ km/h

$D=390$ km.

$t=\frac{D}{S}=\frac{390}{90}\times4\frac{1}{3}\text{H}.=4\text{H}20\text{min}$

a) $t=\frac{390}{120}=3.25$

$=3\text{H}\ 15\text{min}$

$t_{SAVE}=4\text{H}20\text{min}-3\text{H}\ 15\text{min}$

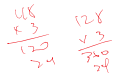
$=1\text{H}\ 5\text{min}$

6a) V t S. speed = 110 km/h, Dist = 230 km, time = 2.1 h.

a) $2.1=\frac{230\text{km}}{110\text{ km/h}}$

$2.1-t=\frac{230}{110+S}$

$2.1-\frac{230}{110+S}=t$



b)

7. Camp A ——— 80km, x days ——— B ——— 128 km, $x+2$ days ——— C

$S = \frac{D}{T}$ $\quad S_{\overline{AB}} = \frac{80}{x}$ $\quad S_{\overline{BC}} = \frac{128}{x+2}$

$S_{\overline{AB}} = S_{\overline{BC}} + 3$

$\frac{80}{x} = \frac{128}{x+2} + 3$

$\frac{80(x+2)(x)}{x} = \frac{128 \cdot x(x+2)}{x+2} + 3 \cdot x(x+2)$

$80(x+2) = 128x + 3(x^2 + 2x)$

$80x + 160 = 128x + 3x^2 + 6x$

$0 = 3x^2 + 54 - 160$

$x = \frac{-54 \pm \sqrt{54^2 - 4 \cdot 3 \cdot -160}}{6}$

$x = -20.59$, $\boxed{x = 2.59}$