6.6 Applications part 1

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Ex 1 p590 construct understanding

$D = rt$

distance = rate of speed x time

	E to GP	GP to E
dist. (Km)	360	360
avg. sp. (Km/h)	r	$r+30$
time (h) →	$\frac{360}{r}$	$\frac{360}{r+30}$

$r = ??$

$D = rt$

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

TOTAL DRIVE TIME = 10

$\frac{360}{r} + \frac{360}{r+30} = 10$

$r(r+30)$

NPV $r \neq 0, -30$

LCD $r(r+30)$

$360(r+30) + 360r = 10r(r+30)$

$360r + 10800 + 360r = 10r^2 + 300r$

$-360r \quad -10800 \quad -360r \qquad -360r \quad -10800$

$0 = 10r^2 - 420r - 10800$

$0 = 10(r^2 - 42 - 1080)$

$0 = 10(r-60)(r+18)$

FACTOR OR FORMULA

$r = 60$, ~~$r = -8$~~

On his way there $r = 60$ km/h
On his return $r = 90$ km/h

ex.2 Kayakers paddle 18 km downstream with the current in the same time it takes to go 8 km upstream against the current. The current is 3 km/h. What is the rate of speed of the kayakers?

$r = ??$

	D	r	$t = \frac{D}{r}$
downstream	18	$r+3$	$\frac{18}{r+3}$
upstream	8	$r-3$	$\frac{8}{r-3}$

Same time

$$\frac{18}{r+3} = \frac{8}{r-3} \longrightarrow \begin{matrix} NPV \\ r \neq \pm 3 \end{matrix}$$

$$18(r-3) = 8(r+3)$$

$$18r - 54 = 8r + 24$$

$$-8r \qquad -8r$$

$$10r - 54 = 24$$

$$10r - 54 = 24$$
$$+54 \quad +54$$

$$10r = 78$$

$$\boxed{r = 7.8 \text{ km/h}}$$

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