~~15~~ ~~28~~ ~~18~~ 34 21

11/8/2012 - Sec 9.4

Mathlow

#15 $\frac{2}{x+1} + \frac{3}{x+2} = \frac{7}{2}$ LCD: $2(x+1)(x+2)$

D: $x \neq -1, -2$

$2 \cdot 2(x+2) + 3 \cdot 2(x+1) = 7(x+1)(x+2)$

$4(x+2) + 6(x+1) = 7(x^2 + 3x + 2)$

$4x + 8 + 6x + 6 = 7x^2 + 21x + 14$

$14 + 10x = 7x^2 + 21x + 14$

$-14 \quad -10x \qquad -10x \quad -14$

$0 = 7x^2 + 11x$

option: Quad Form, Factor, ~~Complete Squ~~

$0 = x(7x + 11)$

$x = 0 \quad 7x + 11 = 0$

$-11 \quad -11$

$\frac{7x}{7} = \frac{-11}{7}$

$x = 0, -11/7$

#18 $\frac{4}{3x} - \frac{1}{2(x+1)} = 1$ LCD: $6x(x+1)$

D: $x \neq 0, -1$

$6x(x+1) = 0$ → $x = 0$ or $x + 1 = 0$ → $x = -1$

$4 \cdot 2(x+1) - 3x = 6x(x+1)$

$8(x+1) - 3x = 6x(x+1)$

$8x + 8 - 3x = 6x^2 + 6x$

$5x + 8 = 6x^2 + 6x$

$-5x \quad -8 \qquad -5x \quad -8$

$0 = 6x^2 + x - 8$

$x = \frac{-1 \pm \sqrt{193}}{12}$

#21 $\frac{6}{p} = 2 + \frac{p}{p+1}$ LCD: $p(p+1)$ D: $p \neq 0, -1$

$6(p+1) = 2p(p+1) + p^2$

$6p + 6 = 2p^2 + 2p + p^2$

$-6p \quad -6 \qquad -6p \qquad -6$

$0 = 3p^2 - 4p - 6$

Solve?

#28 6 hrs total

810 w/ wind

720 against wind

wind 15 mph

Speed plane = x

$r \cdot t = d$

$t = d/r$

	Rate	time	distance
with wind	$x+15$	$\frac{810}{x+15}$	810
against wind	$x-15$	$\frac{720}{x-15}$	720
		6 hrs	

$\frac{810}{x+15} + \frac{720}{x-15} = 6$ LCD: $(x+15)(x-15)$ D: $x \neq -15, 15$

$810(x-15) + 720(x+15) = 6(x+15)(x-15)$

$\frac{810x}{6} - \frac{12150}{6} + \frac{720x}{6} + \frac{10800}{6} = \frac{6(x^2 - 225)}{6}$

$135x - 2025 + 120x + 1800 = x^2 - 225$

$$255x - 225 = x^2 - 225 + 225 - 255x$$

$$0 = x^2 - 255x$$

$$0 = x(x - 255)$$

$x = 0$ ~~$x = 0$~~ $\quad x - 255 = 0$

$$x = \boxed{255 \text{ mph}}$$

#34

Joel: x

Noel: $x+1$

together: $1\frac{1}{2} = \frac{3}{2}$

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

LCD: $2x(x+1)$

D: $x \neq 0, -1$

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

Joel: $x-1$

Noel: x

Joel: 3.6 ~~4.2~~

Noel: 2.6 ~~1.8~~

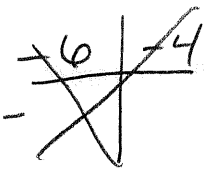
$$3(x+1) + 3x = 2x(x+1)$$

$$3x + 3 + 3x = 2x^2 + 2x$$

$$-6x \qquad -6x$$

$$0 = 2x^2 - 4x - 3$$

$a = 2 \quad b = -4 \quad c = -3$



40

$4 \; 10$

$$x = \frac{2 \pm \sqrt{10}}{2} = \frac{4 \pm \sqrt{40}}{4} = \frac{4 \pm 2\sqrt{10}}{4}$$

$$\frac{2(2 \pm \sqrt{10})}{4 \; 2}$$

$x = 2.58$, ~~-0.58~~

Joel: 2.6 hr, Noel: 3.6 hr

Sec 9.4 Formulas and Further Applications

$d = rt \qquad t = \frac{d}{r}$

#10 $d^2 \cdot R = \frac{k}{d^2} \cdot d^2$ Solve for d

$$\frac{d^2 R}{R} = \frac{k}{R}$$

$$\sqrt{d^2} = \sqrt{\frac{k}{R}}$$

$$d = \pm\sqrt{\frac{k}{R}}$$

$$= \frac{\pm\sqrt{k} \cdot \sqrt{R}}{\sqrt{R} \cdot \sqrt{R}}$$

$$d = \frac{\pm\sqrt{kR}}{R}$$

#28 $P = EI - RI^2$ solve for I

$+RI^2 - EI \qquad -EI \qquad +RI^2$

$$RI^2 - EI + P = 0$$

$a = R \qquad b = -E \qquad c = P$

$$\boxed{I = \frac{E \pm \sqrt{E^2 - 4RP}}{2R}}$$

Can set up problems using:

Pythagoreans Theorem

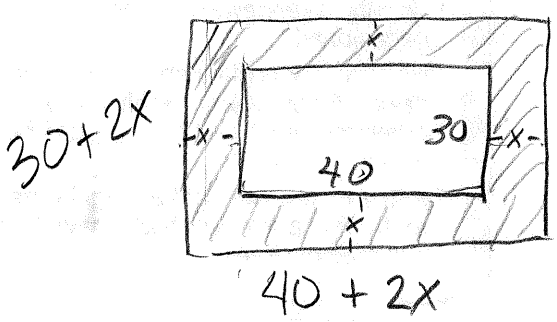
$a^2 + b^2 = c^2$ for Right Δ's

Geometry Formulas

Rectangle: $A = LW$

Triangle: $A = \frac{1}{2}BH$

Now try This Exercise 4 pg 525



Area Shaded = 296

Area Shaded = Area Bigger − Area of Smaller

$296 = (30+2x)(40+2x) - 40(30)$