

WV Chapter 5, Part I Review

1.  $C = \frac{k}{b}$        $C = 0.75$  when  $b = 20$   
 $C = ?$  when  $b = 5$   
 $0.75 = \frac{k}{20}$        $k = 15$        $C = \frac{15}{5} = \textcircled{3}$

2.  $p = knr$        $p = 103.44$ ,  $n = 8h$ ,  $r = 8.62$   
 $n = ?$ ,  $p = 213.75$ ,  $r = 9.50$   
 $103.44 = k(8)(8.62)$        $213.75 = 1.5n(9.5)$   
 $k = 1.5$        $n = 15 \text{ hours}$

3.  $t = \frac{kb}{p}$        $t = 1.5h$ ,  $b = 4$ ,  $p = 3$   
 $b = ?$ ,  $t = 1.8h$ ,  $p = 5$

$1.5 = \frac{k(4)}{3}$        $1.8 = \frac{1.125(b)}{5}$   
 $k = 1.125$        $b = 8 \text{ bushels}$

4.  $C = ks$        $C = 7$ ,  $s = 56$   
 $7 = k(56)$        $C = ?$ ,  $s = 104$        $C = \frac{1}{8}(104) = \textcircled{13} \text{ chaperones}$   
 $k = \frac{1}{8}$

5.  $y = \frac{1}{4}x$ , direct variation (all  $\frac{y}{x} = \frac{1}{4}$ )

6.  $xy = 15$  OR  $y = \frac{15}{x}$  inverse variation (all  $xy = 15$ )

7.  $\frac{(x-2)(x-2)}{(x-2)(5x+1)} = \textcircled{\frac{x-2}{5x+1}}$       8.  $\frac{(x+3)(x-3)}{4(x+3)} = \textcircled{\frac{x-3}{4}}$

9.  $\frac{3(x+2)(x-2)}{5(x-2)} \cdot \frac{1}{2(x+2)} = \textcircled{\frac{3}{10}}$

$$10. \frac{x}{(x+1)(x+1)} \cdot \frac{(x-4)(x-1)}{2x(x+1)} \cdot \frac{2x}{(x+4)(x+4)} = \frac{x}{(x+1)^2(x+4)}$$

$$11. \frac{4 \cdot 12x^2y}{5y^2} \cdot \frac{2xy}{3x^2} = \frac{8xy}{5}$$

$$12. \frac{3(x+2)}{(x+3)(x-3)} \cdot \frac{4(x+3)}{6x(x+2)} = \frac{2}{x(x-3)}$$

$$13. \frac{2x^2}{x \cdot x^2} + \frac{(3x+1)x}{x^2 \cdot x} - \frac{x-2}{x^3} \quad \text{LCD: } x^3$$

$$\frac{2x^2}{\text{LCD}} + \frac{3x^2+x}{\text{LCD}} - \frac{(x-2)}{\text{LCD}} = \frac{5x^2+2}{x^3}$$

$$14. \frac{3}{(x-4)(x-3)} + \frac{5x(x-3)}{(x-4)(x-3)} \quad \text{LCD: } (x-4)(x-3)$$

$$\frac{3}{\text{LCD}} + \frac{5x^2-15x}{\text{LCD}} = \frac{5x^2-15x+3}{(x-4)(x-3)}$$

$$15. \frac{2p}{(p-2)(p-3)} - \frac{5(p-3)}{p-2(p-3)} \quad \text{LCD: } (p-2)(p-3)$$

$$\frac{2p}{\text{LCD}} - \frac{(5p-15)}{\text{LCD}} = \frac{-3p+15}{(p-2)(p-3)} \quad \text{OR} \quad \frac{-3(p-5)}{(p-2)(p-3)}$$

$$16. \frac{3b}{(b+3)(b-3)} + \frac{2(b+3)}{(b-3)(b+3)}$$

$$\text{LCD: } (b+3)(b-3)$$

$$\frac{3b}{\text{LCD}} + \frac{2b+6}{\text{LCD}} = \frac{5b+6}{(b-3)(b+3)}$$

$$17. \frac{\frac{r+6}{r} - \frac{1}{r+2}}{\frac{r^2+4r+3}{r^2+r}} = \frac{\frac{r+6}{r} - \frac{1}{r+2}}{\frac{(r+3)(r+1)}{r(r+1)}}$$

$$\text{LCD: } r(r+2)$$

$$\frac{r(r+2)}{r(r+2)} \cdot \frac{\left(\frac{r+6}{r} - \frac{1}{r+2}\right)}{\left(\frac{r+3}{r}\right)} = \frac{(r+2)(r+6) - r}{(r+2)(r+3)} = \frac{r^2 + 7r + 12}{r^2 + 5r + 6}$$

$$\frac{(r+3)(r+4)}{(r+2)(r+3)} = \frac{r+4}{r+2}$$

$$18. \left(\frac{\frac{n+5}{1} - \frac{12}{n+1}}{\frac{n+9}{n+1} - \frac{5}{n}}\right) \cdot \frac{n(n+1)}{n(n+1)} \quad \text{LCD: } n(n+1)$$

$$\frac{n(n+1)(n+5) - 12n}{n(n+9) - 5(n+1)} = \frac{n(n^2 + 6n + 5) - 12n}{n^2 + 9n - 5n - 5}$$

$$\frac{n^3 + 6n^2 - 7n}{n^2 + 4n - 5} = \frac{n(n^2 + 6n - 7)}{(n-1)(n+5)} = \frac{n(n-1)(n+7)}{(n-1)(n+5)} = \frac{n(n+7)}{n+5}$$

$$19. \quad 3 = \frac{2}{x} - \frac{4}{3x} \quad \text{LCD: } 3x$$

$$9x = 6 - 4$$

$$9x = 2$$

$$x = \frac{2}{9}$$

$$20. \quad \frac{x-2}{x-6} + x = \frac{x+5}{x-6} \quad \text{LCD: } x-6$$

$$x-2 + x(x-6) = x+5$$

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

$$x^2 - 5x - 2 = x+5$$

$$x^2 - 6x - 7 = 0$$

$$(x-7)(x+1) = 0$$

$$x = \{-1, 7\}$$

$$21. \quad \frac{2}{x} + \frac{1}{x-2} = \frac{1}{x^2-2x} \quad \text{LCD: } x(x-2)$$

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

$$2x - 4 + x = 1$$

$$3x = 5$$

$$x = \frac{5}{3}$$

$$22. \quad \frac{1}{x+1} + \frac{1}{x-1} = \frac{2}{x^2-1} \quad \text{LCD: } (x+1)(x-1)$$

$$x-1 + x+1 = 2$$

$$2x = 2$$

$$x = 1$$



$$23. \frac{x}{x+2} + x = \frac{5x+8}{x+2}$$

$$\text{LCD: } x+2$$

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

$$x^2 + 3x = 5x + 8$$

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

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

$$\boxed{x=4} \rightarrow \mathcal{A}$$

$$24. \frac{2x}{x+3} + \frac{5}{x} = \frac{4x^2+12x+21}{x^2+3x}$$

$$\text{LCD: } x(x+3)$$

$$2x^2 + 5x + 15 = 4x^2 + 12x + 21$$

$$2x^2 + 7x + 6 = 0$$

$$(2x+3)(x+2) = 0$$

$$x = \left\{ -\frac{3}{2}, -2 \right\}$$

$$25. d = v_0 t + \frac{1}{2} a t^2$$

$$\text{Car 1 } v_0 = v_0, a = A$$

$$\text{Car 2 } v_0 = v_0, a = 0$$

$$\frac{\text{Car 1 distance}}{\text{Car 2 distance}} = \frac{v_0 t + \frac{1}{2} A t^2}{v_0 t + \frac{1}{2} (0) t^2} = \frac{v_0 t + \frac{1}{2} A t^2}{v_0 t} = \frac{v_0 t}{v_0 t} + \frac{\frac{1}{2} A t^2}{v_0 t}$$

$$\boxed{1 + \frac{A t}{2 v_0}}$$

26. Sun: 2 packages/hour  
Saturday: 4 packages/hour

$$\frac{20}{\frac{10}{2} + \frac{10}{4}} = \frac{20}{5 + \frac{5}{2}} = 20 \div \frac{15}{2} =$$

$$20 \cdot \frac{2}{15} = \frac{40}{15} = \boxed{2\frac{2}{3} \text{ package/hr}}$$