

Module 9 Review Solutions

$$1. \frac{n^2 - 9n + 20}{6m^7n^2} \cdot \frac{10mn^2}{5n-20} = \frac{(n-5)\cancel{(n-4)}}{3 \cdot \cancel{m^7} \cdot \cancel{n^2}} \cdot \frac{\cancel{5} \cdot \cancel{2} \cdot \cancel{n^2}}{\cancel{5} \cdot \cancel{(n-4)}}$$

$$= \frac{n-5}{3m^6}$$

$$2. \frac{4n^3 - 25n}{3n^2 - 16n + 5} \div (10n + 25) = \frac{n(4n^2 - 25)}{(3n-1)(n-5)} \cdot \frac{1}{10n+25}$$

$$= \frac{\cancel{n} \cdot \cancel{(2n-5)} \cdot \cancel{(2n+5)}}{(3n-1)(n-5)} \cdot \frac{1}{5 \cdot \cancel{(2n+5)}} = \frac{n(2n-5)}{5(3n-1)(n-5)}$$

$$3. \frac{11m}{(m+7)(m-4)} + \frac{m}{(m+7)} \cdot \frac{(m-4)}{(m-4)} = \frac{11m}{(m+7)(m-4)} + \frac{m^2 - 4m}{(m+7)(m-4)}$$

$$= \frac{m^2 + 11m - 4m}{(m+7)(m-4)} = \frac{m^2 + 7m}{(m+7)(m-4)} = \frac{m(m+7)}{(m+7)(m-4)} = \frac{m}{m-4}$$

$$4. \frac{d^2 - 11}{d^2 - 7d + 12} - \frac{d+1}{d-4} = \frac{d^2 - 11}{(d-3)(d-4)} - \frac{d+1}{d-4} \cdot \frac{(d-3)}{(d-3)}$$

$$= \frac{d^2 - 11}{(d-3)(d-4)} - \frac{d^2 - 2d - 3}{(d-3)(d-4)} = \frac{2d - 8}{(d-3)(d-4)} = \frac{2(d-4)}{(d-3)(d-4)} = \frac{2}{d-3}$$

$$5. \left(\frac{5}{7} - \frac{3}{x} = \frac{1}{3} \right) (21x) \rightarrow 15x - 63 = 7x$$

$$-63 = -8x \rightarrow \frac{-63}{-8} = \boxed{x = \frac{63}{8}}$$

$$6. \frac{x}{x+4} = \frac{3}{x-1} \rightarrow x(x-1) = 3(x+4) \rightarrow x^2 - x = 3x + 12$$

$$\rightarrow x^2 - 4x - 12 = 0 \rightarrow (x-6)(x+2) = 0$$

$$x-6=0 \quad x+2=0$$

$$\boxed{x=6} \quad \boxed{x=-2}$$

$$7. \frac{1}{x-7} + \frac{x}{x-2} = \frac{5}{x^2-9x+14}$$

$$\frac{1}{x-7} + \frac{x}{x-2} = \frac{5}{(x-7)(x-2)}$$

$$LCD = (x-7)(x-2)$$

$$\frac{1}{x-7} (\cancel{(x-7)}(x-2)) + \frac{x}{x-2} ((x-7)\cancel{(x-2)}) = \frac{5}{(x-7)(x-2)} (\cancel{(x-7)}\cancel{(x-2)})$$

$$x-2 + x(x-7) = 5$$

$$x-2 + x^2 - 7x = 5$$

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

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

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

$$x-7=0$$

$$x=7$$

but

$$x \neq 7$$

since it
creates a
zero in
denominator

$$x+1=0$$

$$x = -1$$

← ONLY
SOLUTION

8. a.) $8 \text{ yds} = 8 \cdot 36 \text{ inches} = \boxed{288 \text{ inches}}$

b.) $5690 \text{ grams} = \frac{5690}{1000} \text{ kilograms} = \boxed{5.69 \text{ kilograms}}$

c.) $5 \text{ hrs} = 5(60)(60) = \boxed{18,000 \text{ seconds}}$

9. $\begin{array}{ccc} \text{Tree} & & \text{Casey} \\ \downarrow & & \downarrow \\ \frac{x}{24} & = & \frac{5}{3} \end{array} \rightarrow 3x = 120 \rightarrow \boxed{x = 40}$

10. Tube would need to be at least $(65 \text{ mm})(3) = 195 \text{ mm}$

$195 \text{ mm} = \boxed{19.5 \text{ cm}}$

11. Box weighs $(5.25 \text{ oz})(24) = 126 \text{ oz}$

since $16 \text{ oz} = 1 \text{ lb.}$

$126 \text{ oz} = \frac{126}{16} \text{ lbs.} = \boxed{7.875 \text{ lbs.}}$

12. $\frac{13 \text{ miles}}{1 \text{ month}} = \frac{x \text{ miles}}{18 \text{ months}} \rightarrow x = 13(18) = \boxed{234 \text{ miles}}$

13. $x = \text{total \# of students}$

$\frac{5}{8}(x) = 3565 \rightarrow x = 3565\left(\frac{8}{5}\right) = \boxed{5704 \text{ students}}$