

Concepts Key

Ex 1: a) $-594 + -783 = -(594 + 783)$
 $= \boxed{-1377}$

b) $-\frac{1}{5} + -\frac{5}{7} = -(\frac{1}{5} + \frac{5}{7}) = -(\frac{7}{35} + \frac{25}{35})$
 $= \boxed{-\frac{32}{35}}$

c) $-0.154 + -9.84 = -(9.84 + 0.154)$
 $= \boxed{-9.994}$

Ex 2: a) $-57 + 192 = +(192 - 57)$
 $= \boxed{135}$

b) $1\frac{2}{5} + -5\frac{1}{3} = -(5\frac{1}{3} - 1\frac{2}{5})$

c) $4.2 + -1.97 = +(4.2 - 1.97)$
 $= \boxed{2.23}$

Ex 3: a) $-278 - 312 = -278 + -312$
 $= -(278 + 312) = \boxed{-590}$

b) $\frac{7}{8} - 1\frac{5}{2} = \frac{7}{8} + -1\frac{5}{2}$
 $= -(\frac{5}{2} - \frac{7}{8}) = \boxed{-\frac{13}{24}}$

c) $-14.87 - (-209.6)$
 $= -14.87 + 209.6 = +(209.6 - 14.87)$
 $= \boxed{194.73}$

Ex 4: a) $-27 \div 5 = \boxed{-5.4}$

b) $-2\frac{1}{3} \div -3 = \frac{-7}{3} \cdot \frac{-1}{3}$
 $= \boxed{\frac{7}{9}}$

c) $5.1 \div -0.3 = \boxed{-17}$

Ex 5: a) $-\frac{1}{5} \cdot -5x = -\frac{175}{-5} \Rightarrow \boxed{x = 35}$

b) $-\frac{3}{2} \cdot -\frac{2}{3}x = \frac{17}{15} \cdot -\frac{3}{2} \Rightarrow \boxed{x = -2\frac{1}{5}}$

c) $0.02x = 2.7 \Rightarrow \boxed{x = 135}$

Ex 6: a) $x + 54 = -112$ $-(112 + 54)$
 $-54 = -54$
 $\boxed{x = -166}$

b) $x + -\frac{5}{7} = 2\frac{6}{35}$
 $+ \frac{5}{7} = +\frac{5}{7} + \frac{25}{35}$
 $\boxed{x = 2\frac{31}{35}}$

c) $x - 0.5 = 1.75$
 $\Rightarrow x + -0.5 = 1.75$
 $0.5 = 0.50$
 $\boxed{x = 2.25}$

Ex 7: a) $2x + 19 = 215$
 $-19 = -19$
 $\frac{1}{2} \cdot 2x = \frac{196}{2}$
 $\boxed{x = 98}$

b) $\frac{1}{2}x - 1 = \frac{2}{3}$
 $\frac{1}{2}x + -1 = \frac{2}{3}$
 $+1 = +1$
 $\frac{1}{2}x = \frac{5}{3}$
 $\cdot \frac{2}{2}x = \frac{5 \cdot 2}{3 \cdot 2}$
 $\boxed{x = \frac{10}{3} = 3\frac{2}{3}}$

Test #4 - Concepts Key p.2

Ex 7: c) $0.5x + -1.28 = -5.80 - (5.8 - 1.28)$
 $+1.28 = +1.28$

$$\begin{array}{r} 9.04 \\ 0.5 \overline{) 4.520} \\ \underline{-4520} \\ - \end{array}$$

$$\frac{0.5x}{0.5} = \frac{-4.52}{0.5}$$

$$\boxed{x = -9.04}$$

Ex 8: a) $0.5(-9.04) + -1.28 \stackrel{?}{=} -5.8$
 $-4.52 + -1.28 \stackrel{?}{=} -5.8$
 $-5.8 = -5.8 \checkmark$

$$\begin{array}{r} 9.04 \\ \times 0.5 \\ \hline 45.20 \\ + 1.28 \\ \hline 5.80 \end{array}$$

b) $(2\frac{31}{35}) + \frac{-5}{7} \stackrel{?}{=} 2\frac{6}{35}$
 $2\frac{6}{35} = 2\frac{6}{35} \checkmark$

$$\begin{array}{r} 2\frac{31}{35} \\ - \frac{5}{7} \frac{25}{35} \\ \hline 2\frac{6}{35} \end{array}$$

Ex 9: a) $\sqrt{16+9} \div 5 \cdot (-2) + 1$
 $= \sqrt{25} \div 5(-2) + 1$
 $= 1 \cdot (-2) + 1 = -2 + 1 = \boxed{-1}$

b) $(2-5)^3 \div 3 - 6 = (-3)^3 \div 3 - 6$
 $= -27 \div 3 - 6 = -9 + -6 = \boxed{-15}$

c) $-|14-15| + |20 \div -5 \cdot 4|$
 $15 \div [(5-6) \cdot 3] + 5$
 $= \frac{-|-1| + |-16|}{15 \div (-1 \cdot 3) + 5} = \frac{1+16}{-5+5} = \frac{17}{0}$
 $= \boxed{\text{undefined}}$

Ex 10:

a) $7x+3+3x=7x+3x+3$
 Commutative Prop of Addition

b) $2 \cdot 3x = (2 \cdot 3)x$
 Associative Prop of Multiplication

c) $(7+3)x = 7x+3x$
 Distributive Property

d) $a \sqrt{0}$ Zero divided by anything
 (also mult. property of zero)

e) $0x = 0$ Multiplication Property of Zero

f) $5 + -5 = 0$

Ex 11: a) $2x-5$ is an expression which can only be evaluated

b) $2x-5=1$ is an equation which can be solved

Ex 12: $x=2, y=-3 \text{ \& } z=-1$

a) $x \div z + (y+z) \Rightarrow (2) \div (-1) + (-3)+(-1)$
 $= -2 + (-4) = \boxed{-6}$

b) $\frac{x}{z} + \frac{y}{z} = \frac{2}{-1} + \frac{-3}{-1} = -2 + 3 = \boxed{1}$

Ex 13: a) $2x + 5x = \boxed{7x}$

b) $\frac{2}{3}x + 5\frac{1}{3} + 2\frac{1}{3}x - \frac{1}{3}$
 $= (2\frac{1}{3}x + \frac{2}{3}x) + (5\frac{1}{3} + -\frac{1}{3})$
 $= 2\frac{2}{3}x + 5 = \boxed{3x + 5}$

c) $2(0.25x+1) - 0.75x - 0.2$
 $= 0.5x + 2 - 0.75x - 0.2$
 $= \boxed{-0.25x + 1.8}$

d) $5 - 2(x+3) - 5x$
 $= 5 + -2(x+3) + -5x$
 $= 5 + -2x + -6 + -5x = \boxed{-7x - 1}$

Test #4 Concepts Key p.3

$$\begin{aligned} \text{Ex 14: a) } & (2x^2 + 3x - 5) + (3x - 5 + 2x^2) \\ &= (2x^2 + 2x^2) + (3x + 3x) + (-5 + -5) \\ &= \boxed{4x^2 + 6x - 10} \text{ or } \boxed{4x^2 + 6x - 10} \end{aligned}$$

$$\begin{aligned} \text{b) } & (5x^2 - 7 + 2x) - (x^2 - 5x^3 + 2) \\ &= (5x^2 + 2x + -7) + (5x^3 + -x^2 + -2) \\ &+ \begin{array}{r} 5x^3 + -x^2 + \quad + -2 \\ \quad 5x^2 + 2x + -7 \\ \hline 5x^3 + 4x^2 + 2x + -9 \end{array} \\ &\text{or } \boxed{5x^3 + 4x^2 + 2x - 9} \end{aligned}$$

$$\text{Ex 15: a) } x^2 \cdot x^5 = x^{2+5} = \boxed{x^7}$$

$$\text{b) } (2x^2y)(3x^3y^2) = (2 \cdot 3)(x^2 \cdot x^3)(y^1 \cdot y^2) = \boxed{6x^5y^3}$$

$$\text{c) } \left(\frac{1}{2}xy\right)\left(\frac{2}{3}x^2y^3\right) = \left(\frac{1}{2} \cdot \frac{2}{3}\right)(x^1 \cdot x^2)(y^1 \cdot y^3) = \boxed{\frac{1}{3}x^3y^4}$$

$$\text{Ex 16: a) } 5(x + 5) = \boxed{5x + 25}$$

$$\text{b) } 2x(x^2 + 2x - 5) = \boxed{2x^3 + 4x^2 - 10x}$$

$$\begin{aligned} \text{c) } & 3x^2y(2x^2 - 3y + 2xy - 5) \\ &= 3x^2y \cdot 2x^2 - 3x^2y \cdot 3y + 3x^2y \cdot 2xy - 3x^2y \cdot 5 \\ &= \boxed{6x^4y - 9x^2y^2 + 6x^3y^2 - 15x^2y} \end{aligned}$$

Ex 17: Degree of terms in 16c)

$$6x^4y \Rightarrow 4+1 = 5^{\text{th}} \text{ degree}$$

$$-9x^2y^2 \Rightarrow 2+2 = 4^{\text{th}} \text{ degree}$$

$$6x^3y^2 \Rightarrow 3+2 = 5^{\text{th}} \text{ degree}$$

$$-15xy \Rightarrow 2+1 = 3^{\text{rd}} \text{ degree}$$

$$\text{Ex 18: Order } 5x^2 - 7 + 2x \Rightarrow \boxed{5x^2 + 2x - 7}$$

$$\text{Ex 19: Degree of } x^2 - 5x^3 + 2? \text{ Highest degree term: } \boxed{3^{\text{rd}}}$$

Ex 20: Example of

a) Monomial $\boxed{5x^2y^3}$
No addition

b) Binomial $\boxed{2 + 5x}$
one addition separating 2 terms

c) Trinomial $\boxed{3x^2 - 4x - 3}$
Two addition/subtractions separating 3 terms