

MATH 50 FINAL EXAM REVIEW KEY

Problem #1

vertical to horizontal

$$\frac{14}{16} = \frac{7}{8}$$

Problem #2

$$P(a, 5, 6) = \frac{3}{6} = \frac{1}{2}$$

Problem #3

$$P(J) = \frac{4}{52} = \frac{1}{13}$$

Problem #4

$$P(\Delta) = \frac{13}{52} = \frac{1}{4}$$

Problem #5

a.) $P(\text{green}) = \frac{5}{22}$

b.) $P(\text{orange}) = \frac{8}{22} = \frac{4}{11}$

Problem #6

$$d = r t$$

$$\frac{224}{3.5} = r \frac{3.5}{3.5}$$

$$r = \boxed{64 \text{ miles per hour}}$$

Problem #7

$$\frac{60}{100} \% \text{ of } 400 \text{ is } \underline{\hspace{2cm}}$$

$$0.6 (400) = x$$

$$\boxed{240} = x$$

Problem #8

$$\frac{70}{100} \% \text{ of } x \text{ is } \frac{45.5}{100}$$

$$\frac{0.7x}{0.7} = \frac{45.5}{0.7}$$

$$x = \boxed{65}$$

Problem #9

$$\frac{\hspace{1cm}}{100} \% \text{ of } 200 \text{ is } \frac{114}{100}$$

$$\frac{x}{200} = \frac{114}{200}$$

$$x = 0.57$$

$$\boxed{57\%}$$

Problem #10

$$\frac{25}{100} \% \text{ of } 1218 \text{ is } \underline{\hspace{2cm}}$$

$$0.25(1218) = x$$

$$x = 304.5$$

Her commission is \$304.50

Problem #11

$$\frac{34}{100} \% \text{ of } x \text{ is } \frac{14}{100}$$

$$\frac{0.34x}{0.34} = \frac{14}{0.34}$$

$$x = 41.2$$

He had 41 attempts

Problem #12

$$\frac{\hspace{1cm}}{100} \% \text{ of } 45 \text{ is } \frac{41}{100}$$

$$\frac{x}{45} = \frac{41}{45}$$

$$x = 0.91$$

She answered 91.1% correctly

Problem #13

$$0.06(285.75) = x$$

$$17.145 = x$$

The sales tax is \$17.15

$$285.75 + 17.15$$

The total purchase is \$302.90

Problem #14

$$\begin{array}{r} \text{original } 100\% \\ + \text{raise } 3.5\% \leftarrow \\ \hline \text{new } 103.5\% \end{array}$$

$$\frac{0.035x}{0.035} = \frac{1102.5}{0.035}$$

$$x = 31500$$

Her original salary was \$31,500

Problem #15

$$\begin{array}{r} \text{original } 100\% \\ + \text{raise } 5.5\% \leftarrow \\ \hline \text{new } 105.5\% \leftarrow \end{array}$$

$$\frac{1.055x}{1.055} = \frac{34393}{1.055}$$

$$x = 32600$$

Her original salary was \$32,600

Problem #16

$$\begin{array}{r} \text{original } 100\% \\ - \text{discount } 35\% \\ \hline \text{new } 65\% \leftarrow \end{array}$$

$$\frac{0.65x}{0.65} = \frac{246.68}{0.65}$$

$$x = 379.508$$

The original price was \$379.51

Problem #17

$$\begin{array}{r} \text{original } 100\% \\ - \text{discount } 30\% \leftarrow \\ \hline \text{new } 70\% \end{array}$$

$$\frac{0.30x}{0.30} = \frac{44.09}{0.30}$$

$$x = 146.967$$

The original price was \$146.97

MATH 50 FINAL EXAM REVIEW KEY

Problem #18

a.) $I = Prt$
 $I = 800(0.07)(6)$
 $I = 336$
 $800 + 336 = \boxed{\$1136}$

b.) $A = P(1 + \frac{r}{n})^{nt}$
 $A = 500(1 + \frac{0.06}{12})^{12(3)}$
 $A = \boxed{\$598.34}$

c.) $A = P(1 + \frac{r}{n})^{nt}$
 $A = 700(1 + \frac{0.05}{365})^{365(2)}$
 $A = \boxed{\$773.61}$

Problem #19

— % of 2000 is 540
 $\frac{x \cdot 2000}{2000} = \frac{540}{2000}$
 $x = 0.27$

$100\% - 27\% = 73\%$
 $\boxed{73\% \text{ believe the Earth revolves around the Sun}}$

Problem #20

$5unt \times B(3.0) = 15$
 $4unt \times A(4.0) = \frac{16}{31}$
 $\frac{16}{9} = \boxed{3.44}$

Problem #21

Mean = $\frac{1505}{20} = \boxed{75.25}$
 55 58 60 64 71 72 74 75 78 80
 80 82 82 82 86 88 90 92 96 100
 Median = $\boxed{80}$
 Mode = $\boxed{82}$

Problem #22

a.) $x - 3y = 6$
 x-intercept (set $y=0$)
 $x - 3(0) = 6$
 $x = 6$ $\boxed{(6, 0)}$

y-intercept (set $x=0$)
 $0 - 3y = 6$
 $\frac{-3y}{-3} = \frac{6}{-3}$
 $y = -2$ $\boxed{(0, -2)}$

Third solution choosing $y=1$
 $x - 3(1) = 6$
 $x - 3 = 6$
 $x = 6 + 3$
 $x = 9$ $\boxed{(9, 1)}$

b.) $y = -4x$
 x-intercept (set $y=0$)

$0 = -4x$
 $\frac{0}{-4} = \frac{-4x}{-4}$
 $0 = x$ $\boxed{(0, 0)}$

y-intercept (set $x=0$)
 $y = -4(0)$
 $y = 0$ $\boxed{(0, 0)}$

Third solution choosing $x=1$
 $y = -4(1)$
 $y = -4$ $\boxed{(1, -4)}$

Problem #23

a.) $(-x^5 + 9x^2y^2 - 2x^2y + 5xy - 3y^2) + (4x^5 - 10x^2y^2 + 6xy - y^2)$
 $\boxed{3x^5 - x^2y^2 - 2x^2y + 11xy - 4y^2}$

b.) $(-m^2n^4m^3 + 4m^2n^3 - 6mn - 10n^2 + 14) - (m^6 + 3n^4m^3 + 10m^2n^3 - 6mn + 8n^2 - 2)$
 $(-m^6 - n^4m^3 + 4m^2n^3 - 6mn - 10n^2 + 14) + (-m^6 - 3n^4m^3 - 10m^2n^3 + 6mn - 8n^2 + 2)$
 $\boxed{-2m^6 - 4n^4m^3 - 6m^2n^3 - 18n^2 + 16}$

Problem #23 continued

c.) $5xy(9x^2y^3)(2x^4)$

$45x^3y^4(2x^4)$

$90x^7y^4$

d.) $9ab^2(4a^3-3ab-5b^2)$

$36a^4b^2-27a^2b^3-45ab^4$

e.) $(6a^4b^2)^3$

$(6a^4b^2)(6a^4b^2)(6a^4b^2)$

$216a^{12}b^6$

f.) $(5z+3)(7z-9)$

$35z^2-45z+21z-27$

$35z^2-24z-27$

g.) $(2x-1)(x^2-4x+2)$

$2x^3-8x^2+4x-x^2+4x-2$

$2x^3-9x^2+8x-2$

h.) $(a^4+\frac{1}{4}a^2-a-\frac{1}{6})+(\frac{3}{10}a^3+a^2-\frac{2}{3}a+4)$

$a^4+\frac{3}{10}a^3+\frac{5}{4}a^2-\frac{5}{3}a+\frac{23}{6}$

i.) $(2x^4+\frac{3}{5}x^2-\frac{1}{8}x+1)-(\frac{1}{6}x^4+\frac{1}{4}x^2-\frac{1}{2}x-\frac{1}{3})$

$(2x^4+\frac{3}{5}x^2-\frac{1}{8}x+1)+(-\frac{1}{6}x^4-\frac{1}{4}x^2+\frac{1}{2}x+\frac{1}{3})$

$-4x^2+\frac{7}{20}x^2+\frac{3}{8}x+\frac{4}{3}$

j.) $(-\frac{1}{6}m^3n^5)(\frac{3}{5}m^7n^2)$

$-\frac{1}{6} \cdot \frac{3}{5}$

$-\frac{1}{10}m^{10}n^7$

k.) $-\frac{5}{8}(4t^2-\frac{2}{3}t-\frac{1}{10})$

$-\frac{1}{2}t^2+\frac{5}{12}t+\frac{1}{16}$

$-\frac{5}{8} \cdot \frac{4}{8} = -\frac{1}{2}$

$-\frac{5}{8} \cdot -\frac{2}{3} = \frac{5}{12}$

$-\frac{5}{8} \cdot -\frac{1}{10} = \frac{1}{16}$

l.) $(\frac{1}{4}u-\frac{1}{3})(\frac{1}{2}u+\frac{2}{3})$

$\frac{1}{8}u^2+\frac{1}{6}u-\frac{1}{6}u-\frac{2}{9}$

$\frac{1}{8}u^2-\frac{2}{9}$

$\frac{1}{4} \cdot \frac{1}{2} = \frac{1}{8}$ $\frac{1}{4} \cdot \frac{2}{3} = \frac{1}{6}$

$-\frac{1}{3} \cdot \frac{1}{2} = -\frac{1}{6}$ $-\frac{1}{3} \cdot \frac{2}{3} = -\frac{2}{9}$

m.) $(5k^3+2.5k^2-6.2k-0.44)-(2.2k^3-6.2k-0.5)$

$(5k^3+2.5k^2-6.2k-0.44)+(-2.2k^3+6.2k+0.5)$

$2.8k^3+2.5k^2+0.06$

n.) $-6.8(0.02a^3-ab+1.9b)$

$-0.136a^3+6.8ab-12.92b$

o.) $(6.1y+2)(0.8y-5)$

$4.88y^2-30.5y+1.6y-10$

$4.88y^2-28.9y-10$

p.) $48x^3y^8z^5w^2 \div (-6x^2y^3z^2)$

$-8xy^5z^3w^2$

q.) $38m^7n^3 \div 2m^4n$

$19m^3n^2$

Problem #24

268
1
2 134
2 1 67

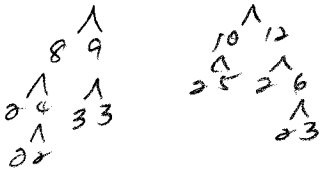
$2^2 \cdot 67$

Problem #25

80
1.80
2.40
4.20
5.16
8.10

Problem #26

a) 72 and 120

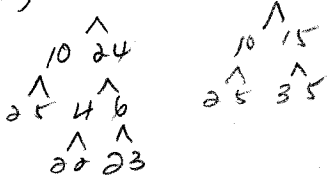


$$72 = 2^3 \cdot 3^2$$

$$120 = 2^3 \cdot 3 \cdot 5$$

$$\text{GCF} = 2^3 \cdot 3 = \boxed{24}$$

b) 240 and 150



$$240 = 2^4 \cdot 3 \cdot 5$$

$$150 = 2 \cdot 3 \cdot 5^2$$

$$\text{GCF} = 2 \cdot 3 \cdot 5 = \boxed{30}$$

c) $40x^6y^2z^3$ and $32x^3y^3$

$$\text{GCF} = \boxed{8x^3y^2}$$

d) $24m^2n^8$, $12m^3n^5p$, $30m^2n^3$

$$\text{GCF} = \boxed{6m^2n^3}$$

Problem #27

a) $8x - 4$

$$\text{GCF} = 4$$

$$\boxed{4(2x - 1)}$$

b) $32b^8 + 24b^4$

$$\text{GCF} = 8b^4$$

$$\boxed{8b^4(4b^4 + 3)}$$

c) $20x^5y^2z^3 - 24x^2y^7$

$$\text{GCF} = 4x^2y^2$$

$$\boxed{4x^2y^2(5x^3z^3 - 6y^5)}$$

d) $10x^4y^6z - 20x^5y^3z^2 - 40x^3y^5$

$$\text{GCF} = 10x^3y^3$$

$$\boxed{10x^3y^3(xy^3z - 2x^2z^2 - 4y^2)}$$

Problem #28

a) $y + 19 = -6$

$$y + 19 - 19 = -6 - 19$$

$$\boxed{y = -25}$$

b) $2x - 15 - x = 9 - 17$

$$x - 15 = -8$$

$$x - 15 + 15 = -8 + 15$$

$$\boxed{x = 7}$$

c) $6b + 7 = 5b + 3$

$$6b + 7 - 5b = 5b + 3 - 5b$$

$$b + 7 = 3$$

$$b + 7 - 7 = 3 - 7$$

$$\boxed{b = -4}$$

d) $8u + 13 - 2u = 2u + 11 + 3u$

$$6u + 13 = 5u + 11$$

$$6u + 13 - 5u = 5u + 11 - 5u$$

$$u + 13 = 11$$

$$u + 13 - 13 = 11 - 13$$

$$\boxed{u = -2}$$

e) $9 - 5(b - 1) = -4(b - 2)$

$$9 - 5b + 5 = -4b + 8$$

$$-5b + 14 = -4b + 8$$

$$-5b + 14 + 5b = -4b + 8 + 5b$$

$$14 = b + 8$$

$$14 - 8 = b + 8 - 8$$

$$\boxed{b = 6}$$

Problem # 28 continued

$$\begin{aligned}
 f.) \quad & -4y + 15 = -9y - 20 \\
 & -4y + 15 + 9y = -9y - 20 + 9y \\
 & 5y + 15 = -20 \\
 & 5y + 15 - 15 = -20 - 15 \\
 & 5y = \frac{-35}{5} \\
 & \boxed{y = -7}
 \end{aligned}$$

$$\begin{aligned}
 g.) \quad & 5 - 8x - 24 = 7x + 11 - 5x \\
 & -8x - 19 = 2x + 11 \\
 & -8x - 19 + 8x = 2x + 11 + 8x \\
 & -19 = 10x + 11 \\
 & -19 - 11 = 10x + 11 - 11 \\
 & \frac{-30}{10} = \frac{10x}{10} \\
 & \boxed{-3 = x}
 \end{aligned}$$

$$\begin{aligned}
 h.) \quad & 13 - 9h - 15 = 7h + 22 - 8h \\
 & -9h - 2 = -h + 22 \\
 & -9h - 2 + 9h = -h + 22 + 9h \\
 & -2 = 8h + 22 \\
 & -2 - 22 = 8h + 22 - 22 \\
 & \frac{-24}{8} = \frac{8h}{8} \\
 & \boxed{-3 = h}
 \end{aligned}$$

$$\begin{aligned}
 l.) \quad & -2(x+7) - 9 = 5x + 12 \\
 & -2x - 14 - 9 = 5x + 12 \\
 & -2x - 23 = 5x + 12 \\
 & -2x - 23 + 2x = 5x + 12 + 2x \\
 & -23 = 7x + 12 \\
 & -23 - 12 = 7x + 12 - 12 \\
 & \frac{-35}{7} = \frac{7x}{7} \\
 & \boxed{-5 = x}
 \end{aligned}$$

$$\begin{aligned}
 j.) \quad & 11x - 4(2x-3) = 18 + 5(x+2) \\
 & 11x - 8x + 12 = 18 + 5x + 10 \\
 & 3x + 12 = 5x + 28 \\
 & 3x + 12 - 3x = 5x + 28 - 3x \\
 & 12 = 2x + 28 \\
 & 12 - 28 = 2x + 28 - 28 \\
 & \frac{-16}{2} = \frac{2x}{2} \\
 & \boxed{-8 = x}
 \end{aligned}$$

$$\begin{aligned}
 k.) \quad & 8x - (3x+7) = 14 - 4(x-6) \\
 & 8x - 3x - 7 = 14 - 4x + 24 \\
 & 5x - 7 = -4x + 38 \\
 & 5x - 7 + 4x = -4x + 38 + 4x \\
 & 9x - 7 = 38 \\
 & 9x - 7 + 7 = 38 + 7 \\
 & \frac{45}{9} = \frac{45}{9} \\
 & \boxed{x = 5}
 \end{aligned}$$

$$\begin{aligned}
 l.) \quad & \frac{2}{3}y - 8 = \frac{1}{6} \\
 & \text{LCD} = 6 \\
 & 6\left(\frac{2}{3}y\right) - 6(8) = 6\left(\frac{1}{6}\right) \\
 & 4y - 48 = 1 \\
 & 4y - 48 + 48 = 1 + 48 \\
 & \frac{49}{4} = \frac{49}{4} \\
 & \boxed{y = 49/4}
 \end{aligned}$$

$$\begin{aligned}
 m.) \quad & \frac{1}{8} + n = \frac{5}{6}n - \frac{2}{3} \\
 & \text{LCD} = 24 \\
 & 24\left(\frac{1}{8}\right) + 24(n) = 24\left(\frac{5}{6}n\right) - 24\left(\frac{2}{3}\right) \\
 & 3 + 24n = 20n - 16 \\
 & 3 + 24n - 20n = 20n - 16 - 20n \\
 & 4n + 3 = -16 \\
 & 4n + 3 - 3 = -16 - 3 \\
 & \frac{4n}{4} = \frac{-19}{4} \\
 & \boxed{n = -19/4}
 \end{aligned}$$

Problem #28 continued

$$n.) \frac{5}{6}(x-8) = \frac{1}{5}x - \frac{1}{3}$$

$$\frac{5}{6}x - \frac{20}{3} = \frac{1}{5}x - \frac{1}{3}$$

$$LCD = 30$$

$$30\left(\frac{5}{6}x\right) - 30\left(\frac{20}{3}\right) = 30\left(\frac{1}{5}x\right) - 30\left(\frac{1}{3}\right)$$

$$25x - 200 = 6x - 10$$

$$25x - 200 - 6x = 6x - 10 - 6x$$

$$19x - 200 = -10$$

$$19x - 200 + 200 = -10 + 200$$

$$\frac{19x}{19} = \frac{190}{19}$$

$$x = 10$$

$$o.) \frac{28}{42} = \frac{x}{6}$$

$$\frac{168}{42} = \frac{42x}{42}$$

$$4 = x$$

$$p.) \frac{-5m}{6} = \frac{-5}{2}$$

$$\frac{-105m}{-105} = \frac{-30}{-105}$$

$$m = \frac{2}{7}$$

$$q.) 4.5x - 2.61 = 0.99$$

$$4.5x - 2.61 + 2.61 = 0.99 + 2.61$$

$$\frac{4.5x}{4.5} = \frac{3.6}{4.5}$$

$$x = 0.8$$

$$r.) 2.1x - 12.6 = 1.9x - 10.98$$

$$2.1x - 12.6 - 1.9x = 1.9x - 10.98 - 1.9x$$

$$0.2x - 12.6 = -10.98$$

$$0.2x - 12.6 + 12.6 = -10.98 + 12.6$$

$$\frac{0.2x}{0.2} = \frac{1.62}{0.2}$$

$$x = 8.1$$

$$s.) 4(2.55 - x) - 5.8x = 12.2 - (8 + 11.4x)$$

$$10.2 - 4x - 5.8x = 12.2 - 8 - 11.4x$$

$$10.2 - 9.8x = 4.2 - 11.4x$$

$$10.2 - 9.8x + 11.4x = 4.2 - 11.4x + 11.4x$$

$$1.6x + 10.2 = 4.2$$

$$1.6x + 10.2 - 10.2 = 4.2 - 10.2$$

$$\frac{1.6x}{1.6} = \frac{-6}{1.6}$$

$$x = -3.75$$

Problem #29

a.) The difference of a number and nine is equal to four.

$$n - 9 = 4$$

b.) The product of negative three and a number is twenty-one.

$$-3n = 21$$

c.) A number increased by seventeen is negative eight.

$$n + 17 = -8$$

d.) Nine more than the product of eight and a number is the same as three times the sum of the number and thirteen.

$$9 + 8n = 3(n + 13)$$

Problem # 29 continued

e.) $\frac{3}{8}$ ^{-rev} $\frac{2}{6}$ less than twice a number
 is the same as $\frac{5}{6}$ more than the number

$$2n - \frac{3}{8} = \frac{5}{6} + n$$

f.) $\frac{7}{11}$ \otimes a number $\bar{=}$ $3\frac{1}{8}$

$$\frac{7}{11} \cdot n = 3\frac{1}{8}$$

g.) 0.6 times the sum of k and 1.5
 is equal to 0.42 plus the product of 1.2 and k .

$$0.6(k + 1.5) = 0.42 + 1.2k$$

Problem # 30

a.) $2^6 - 18 \div 3 \cdot 5 - \sqrt{100}$

$$\begin{aligned} & \downarrow \\ & 2^6 - 18 \div 3 \cdot 5 - 10 \\ & \downarrow \\ & 64 - 18 \div 3 \cdot 5 - 10 \\ & \downarrow \\ & 64 - 6 \cdot 5 - 10 \\ & \downarrow \\ & 64 - 30 - 10 \\ & \downarrow \\ & 34 - 10 \\ & \downarrow \\ & 24 \end{aligned}$$

b.) $2(7-4) + 8^2 - (16+5) \div 7$

$$\begin{aligned} & \downarrow \\ & 2 \cdot 3 + 8^2 - (16+5) \div 7 \\ & \downarrow \\ & 2 \cdot 3 + 8^2 - 21 \div 7 \\ & \downarrow \\ & 2 \cdot 3 + 64 - 21 \div 7 \\ & \downarrow \\ & 6 + 64 - 21 \div 7 \\ & \downarrow \\ & 6 + 64 - 3 \\ & \downarrow \\ & 70 - 3 \\ & \downarrow \\ & 67 \end{aligned}$$

c.) $31 - 3[(20-6) - 3 \cdot 2] + 2^4$

$$\begin{aligned} & \downarrow \\ & 31 - 3[14 - 3 \cdot 2] + 2^4 \\ & \downarrow \\ & 31 - 3[14 - 6] + 2^4 \\ & \downarrow \\ & 31 - 3 \cdot 8 + 2^4 \\ & \downarrow \\ & 31 - 3 \cdot 8 + 16 \\ & \downarrow \\ & 31 - 24 + 16 \\ & \downarrow \\ & 7 + 16 \\ & \downarrow \\ & 23 \end{aligned}$$

d.) $\{18 - 4[21 \div (3+4)]\} + 2\sqrt{16 \cdot 4}$

$$\begin{aligned} & \downarrow \\ & \{18 - 4[21 \div 7]\} + 2\sqrt{16 \cdot 4} \\ & \downarrow \\ & \{18 - 4 \cdot 3\} + 2\sqrt{16 \cdot 4} \\ & \downarrow \\ & \{18 - 12\} + 2\sqrt{16 \cdot 4} \\ & \downarrow \\ & 6 + 2\sqrt{16 \cdot 4} \\ & \downarrow \\ & 6 + 2\sqrt{64} \\ & \downarrow \\ & 6 + 2 \cdot 8 \\ & \downarrow \\ & 6 + 16 \\ & \downarrow \\ & 22 \end{aligned}$$

e.) $4\{[25 - (19+2)] \cdot (3+1)\} - (3+5)^2$

$$\begin{aligned} & \downarrow \\ & 4\{[25 - 21] \cdot (3+1)\} - (3+5)^2 \\ & \downarrow \\ & 4\{4 \cdot (3+1)\} - (3+5)^2 \\ & \downarrow \\ & 4\{4 \cdot 4\} - (3+5)^2 \\ & \downarrow \\ & 4 \cdot 16 - (3+5)^2 \\ & \downarrow \\ & 4 \cdot 16 - 8^2 \\ & \downarrow \\ & 4 \cdot 16 - 64 \\ & \downarrow \\ & 64 - 64 \\ & \downarrow \\ & 0 \end{aligned}$$

Problem #30 continued

f.) $\frac{(12-5)^2 + 2^3}{10 \div 2 - (11-9)}$

$$\begin{array}{r} (12-5)^2 + 2^3 \\ \downarrow \\ 7^2 + 2^3 \\ \downarrow \\ 49 + 2^3 \\ \downarrow \\ 49 + 8 \\ \downarrow \\ 57 \end{array} \quad \begin{array}{r} 10 \div 2 - (11-9) \\ \downarrow \\ 10 \div 2 - 2 \\ \downarrow \\ 5 - 2 \\ \downarrow \\ 3 \end{array}$$

$$\frac{57}{3} = \boxed{19}$$

g.) $39 \div 3 + (24-30) - 5^2 + (-21 - (-13))$

$$\begin{array}{r} 39 \div 3 + (-6) - 5^2 + (-21 - (-13)) \\ \downarrow \\ 39 \div 3 + (-6) - 5^2 + (-8) \\ \downarrow \\ 39 \div 3 + (-6) - 25 + (-8) \\ \downarrow \\ 13 + (-6) - 25 + (-8) \\ \downarrow \\ 7 - 25 + (-8) \\ \downarrow \\ -18 + (-8) \\ \downarrow \\ \boxed{-26} \end{array}$$

h.) $[9(-2) - (-18)] \div [15 - 5(2 - (-1))]$

$$\begin{array}{r} [9(-2) - (-18)] \div [15 - 5(2 - (-1))] \\ \downarrow \\ [-38 - (-18)] \div [15 - 5 \cdot 3] \\ \downarrow \\ -20 \div [15 - 15] \\ \downarrow \\ -20 \div 0 \\ \downarrow \\ \boxed{\text{undefined}} \end{array}$$

i.) $4\sqrt{169} - \{(-4)^3 + 2[18 \div (-2) + (4 - (-2))]\}$

$$\begin{array}{r} 4\sqrt{169} - \{(-4)^3 + 2[18 \div (-2) + (4 - (-2))]\} \\ \downarrow \\ 4 \cdot 13 - \{(-4)^3 + 2[18 \div (-2) + (4 - (-2))]\} \\ \downarrow \\ 4 \cdot 13 - \{(-4)^3 + 2[18 \div (-2) + 6]\} \\ \downarrow \\ 4 \cdot 13 - \{(-4)^3 + 2[-9 + 6]\} \\ \downarrow \\ 4 \cdot 13 - \{(-4)^3 + 2(-3)\} \\ \downarrow \\ 4 \cdot 13 - \{(-64) + 2(-3)\} \\ \downarrow \\ 4 \cdot 13 - \{(-64) + (-6)\} \\ \downarrow \\ 4 \cdot 13 - (-70) \\ \downarrow \\ 48 - (-70) \\ \downarrow \\ \boxed{118} \end{array}$$

j.) $3 + (4-6)^3 + 3\sqrt{25} - 18 \div 3$

$$\begin{array}{r} 3 + (4-6)^3 + 3\sqrt{25} - 18 \div 3 \\ \downarrow \\ 3 + (-2)^3 + 3\sqrt{25} - 18 \div 3 \\ \downarrow \\ 3 + (-2)^3 + 3 \cdot 5 - 18 \div 3 \\ \downarrow \\ 3 + (-8) + 3 \cdot 5 - 18 \div 3 \\ \downarrow \\ 3 + (-8) + 15 - 18 \div 3 \\ \downarrow \\ 3 + (-8) + 15 - 6 \\ \downarrow \\ -5 + 15 - 6 \\ \downarrow \\ 10 - 6 \\ \downarrow \\ \boxed{4} \end{array}$$

k.) $\frac{1}{6} - 5 \cdot \frac{7}{10}$

$\frac{1}{1} \cdot \frac{7}{10} = \frac{7}{10}$

$\frac{1}{6} - \frac{7}{10}$

LCD = 6

$\frac{1}{6} - \frac{21}{6}$

$\frac{-20}{6} = \boxed{-\frac{10}{3}}$

MATH 50 FINAL EXAM REVIEW KEY

Problem #30 continued

l.) $5\frac{1}{3} + \frac{3}{4} \div \frac{5}{12}$

$\frac{16}{3} + \frac{9}{5}$

LCD = 15

$\frac{80}{15} + \frac{27}{15} = \boxed{\frac{107}{15}}$

$\frac{3}{4} \div \frac{5}{12}$

$\frac{3}{4} \cdot \frac{12}{5}$

m.) $7\frac{1}{4} + \frac{3}{4}\sqrt{\frac{4}{9}}$

$\frac{29}{4} + \frac{3}{4} \cdot \frac{2}{3}$

$\frac{3}{4} \cdot \frac{2}{3} = \frac{1}{2}$

$\frac{29}{4} + \frac{1}{2}$

LCD = 4

$\frac{29}{4} + \frac{2}{4} = \boxed{\frac{31}{4}}$

n.) $(\frac{1}{2})^3 + 2\frac{1}{4} - 5(\frac{3}{10} + \frac{1}{5})$

$(\frac{1}{2})^3 + \frac{9}{4} - \frac{5}{1} \cdot \frac{1}{2}$

↓

$\frac{1}{8} + \frac{9}{4} - \frac{5}{1} \cdot \frac{1}{2}$

$\frac{1}{8} + \frac{9}{4} - \frac{5}{2}$

LCD = 8

$\frac{1}{8} + \frac{18}{8} - \frac{20}{8} = \boxed{-\frac{1}{8}}$

$\frac{3}{10} + \frac{1}{5}$

LCD = 10

$\frac{3}{10} + \frac{2}{10} = \frac{5}{10} = \frac{1}{2}$

o.) $5(\frac{1}{2} - 3\frac{4}{5}) - 2(\frac{1}{6} + 4)$

$5(-\frac{33}{10}) - 2(\frac{1}{6} + \frac{4}{1})$

$\frac{1}{5}(-\frac{33}{10}) - 2(\frac{25}{6})$

↓

$-\frac{33}{2} - \frac{2}{1}(\frac{25}{3})$

$-\frac{33}{2} - \frac{25}{3}$

LCD = 6

$-\frac{99-50}{6} = \boxed{-\frac{149}{6}}$

$\frac{1}{2} - \frac{19}{5}$

LCD = 10

$\frac{5-38}{10} = -\frac{33}{10}$

$\frac{1}{6} + \frac{4}{1}$

LCD = 6

$\frac{1}{6} + \frac{24}{6} = \frac{25}{6}$

p.) $9.28 - 0.56(12)$

$9.28 - 6.72$

$\boxed{2.56}$

q.) $(0.4)^2 - 2.8 \div 0.2(1.6)$

↓

$0.16 - 2.8 \div 0.2(1.6)$

$0.16 - 14(1.6)$

$0.16 - 22.4$

$\boxed{-22.24}$

r.) $7.5 + 2.2\sqrt{0.25} - 36.8 \div 8$

$7.5 + 2.2(0.5) - 36.8 \div 8$

$7.5 + 1.1 - 36.8 \div 8$

$7.5 + 1.1 - 4.6$

$8.6 - 4.6$

$\boxed{4}$

Problem #34 continued

c) $4\frac{5}{8} \cdot 16$

$$\frac{37}{8} \cdot \frac{16}{1} = \frac{37}{1} \cdot \frac{2}{1} = \frac{74}{1} = \boxed{74}$$

d) $2\frac{2}{10} \cdot -8\frac{1}{3}$

$$\frac{22}{10} \cdot \frac{-25}{3} = \frac{9}{10} \cdot \frac{-25}{1}$$

$$= \frac{9}{2} \cdot \frac{-5}{1} = \boxed{\frac{-45}{2}}$$

e) $\frac{-10x^4y}{14z}, \frac{2z}{14x^2}$

$$\frac{-10x^4y}{12}, \frac{2z}{14x^2}$$

$$\frac{-5x^4y}{12}, \frac{2z}{7x^2}$$

$$\frac{-5x^2y}{12}, \frac{2z}{7}$$

$$\frac{-5x^2y}{1}, \frac{2}{7} = \boxed{\frac{-10x^2y}{7}}$$

f) $\frac{9m^3}{25n^4p}, \frac{-3}{18m^2p}$

$$\frac{9m^3}{5n^4p}, \frac{-3n}{18m^2p}$$

$$\frac{1m^3}{5n^4p}, \frac{-3n}{2m^2p}$$

$$\frac{1m}{5n^4p}, \frac{-3n}{2p}$$

$$\frac{1m}{5n^3p}, \frac{-3}{2p} = \boxed{\frac{-3m}{10n^3p^2}}$$

g) $\left(\frac{t^4}{4y}\right)^3$

$$\frac{t^4}{4y} \cdot \frac{t^4}{4y} \cdot \frac{t^4}{4y}$$

$$\boxed{\frac{t^{12}}{64y^3}}$$

h) $\frac{14}{15} \div -\frac{7}{12}$

$$\frac{14}{15} \cdot \left(-\frac{12}{7}\right)$$

$$\frac{2}{15} \cdot \left(-\frac{12}{1}\right)$$

$$\frac{2}{5} \cdot \frac{-4}{1} = \boxed{\frac{-8}{5}}$$

i) $-\frac{3}{4} \div 6$

$$-\frac{3}{4} \cdot \frac{1}{6}$$

$$-\frac{3}{4} \cdot \frac{1}{2} = \boxed{\frac{-3}{8}}$$

j) $\frac{12}{-\frac{2}{3}}$

$$12 \div \left(-\frac{2}{3}\right)$$

$$\frac{12}{1} \cdot \left(-\frac{3}{2}\right)$$

$$\frac{6}{1} \cdot \left(-\frac{3}{1}\right) = \boxed{-18}$$

k) $\frac{t^2u^4}{18v^3} \div \frac{-10t^5}{12v}$

$$\frac{t^2u^4}{18v^3} \cdot \frac{12v}{-10t^5}$$

$$\frac{t^2u^4}{3v^3} \cdot \frac{2v}{-5t^5}$$

$$\frac{t^2u^4}{3v^3} \cdot \frac{1v}{-5t^5} = \boxed{\frac{u^4}{-15v^2t^3}}$$

l) $\sqrt{\frac{81}{16}} = \frac{\sqrt{81}}{\sqrt{16}} = \boxed{\frac{9}{4}}$

m) $\frac{3}{10} + \frac{5}{6}$
LCD = 30

$$\frac{9}{30} + \frac{25}{30} = \frac{34}{30} = \boxed{\frac{17}{15}}$$

n) $\frac{7}{12} - \frac{11}{36}$

LCD = 36

$$\frac{21}{36} - \frac{11}{36} = \frac{10}{36} = \boxed{\frac{5}{18}}$$

o) $\frac{9}{16m} - \frac{3}{8m}$

LCD = 16m

$$\frac{9}{16m} - \frac{6}{16m} = \boxed{\frac{3}{16m}}$$

p) $\frac{2}{3n^2} - \frac{7}{9n}$

LCD = 9n²

$$\frac{6}{9n^2} - \frac{7n}{9n^2} = \boxed{\frac{6-7n}{9n^2}}$$

q) $6\frac{7}{8} - (-3\frac{1}{4})$

$$\frac{55}{8} + \frac{13}{4}$$

LCD = 8

$$\frac{55}{8} + \frac{26}{8} = \boxed{\frac{81}{8}}$$

Problem #35

a) 16 and 20

$$\begin{array}{cc} \wedge & \wedge \\ 4 & 4 \\ 2 \times 2 & 2 \times 2 \times 5 \end{array}$$

$16 = 2^4$

$20 = 2^2 \cdot 5$

$LCM = 2^4 \cdot 5 = \boxed{80}$

b.) 63 and 28

$$\begin{array}{cc} \wedge & \wedge \\ 9 & 4 \\ 3 \times 3 & 2 \times 2 \times 7 \end{array}$$

$63 = 3^2 \cdot 7$

$28 = 2^2 \cdot 7$

$LCM = 2^2 \cdot 3^2 \cdot 7$
 $4 \cdot 9 \cdot 7 = \boxed{252}$

c.) 26 30 39

$$\begin{array}{ccc} \wedge & \wedge & \wedge \\ 2 & 3 & 3 \\ 13 & 10 & 13 \\ & 2 \cdot 5 & \end{array}$$

$26 = 2 \cdot 13$

$30 = 2 \cdot 3 \cdot 5$

$39 = 3 \cdot 13$

$LCM = 2 \cdot 3 \cdot 5 \cdot 13 = \boxed{390}$

d) 9ab and 3b

$LCM = \boxed{9ab}$

e) $20h^5k$ and $15h^2k^3$

$LCM = \boxed{60h^5k^3}$

Problem #36

a.) $56.482 + 43.9327$

$$\begin{array}{r} 56.4820 \\ + 43.9327 \\ \hline \boxed{100.4147} \end{array}$$

b.) $72.462 - 94.5234$

$$\begin{array}{r} 94.5234 \\ - 72.4620 \\ \hline \boxed{-22.0614} \end{array}$$

c.) $(5.62)(3.4)$

$$\begin{array}{r} 5.62 \\ \times 3.4 \\ \hline 2248 \\ 1686 \\ \hline \boxed{19.108} \end{array}$$

d.) $93.96 \div 10.8$

$$\begin{array}{r} 8.7 \\ 10.8 \overline{) 93.96} \\ \underline{-864} \\ 756 \\ \underline{-756} \\ 0 \end{array}$$

e.) $19.6 \div 0.11$

$$\begin{array}{r} 178.181 \\ 0.11 \overline{) 19.6000} \\ \underline{-11} \\ 86 \\ \underline{-77} \\ 90 \\ \underline{-88} \\ 20 \\ \underline{-11} \\ 90 \\ \underline{-88} \\ 20 \\ \underline{-11} \\ 9 \end{array}$$

$\boxed{178.18}$

Problem #37

a) $\frac{9}{20} = \boxed{0.45}$

$$\begin{array}{r} 45 \\ 20 \overline{) 9.00} \\ \underline{-80} \\ 100 \\ \underline{-100} \\ 0 \end{array}$$

b.) $-\frac{5}{32} = \boxed{-0.15625}$

$$\begin{array}{r} 15625 \\ 32 \overline{) 5.00000} \\ \underline{-32} \\ 180 \\ \underline{-160} \\ 200 \\ \underline{-192} \\ 80 \\ \underline{-64} \\ 160 \\ \underline{-160} \\ 0 \end{array}$$

c) $5\frac{5}{9} = \boxed{5.\overline{5}}$

$$\begin{array}{r} 55 \\ 9 \overline{) 5.00} \\ \underline{-45} \\ 50 \\ \underline{-45} \\ 5 \end{array}$$

Problem #38

a.) $A = \frac{1}{2}bh$

$A = \frac{1}{2}(6)(4) = \boxed{6 \text{ cm}^2}$

b.) $A = \pi r^2$

$A \approx 3.14(6)^2$

$A \approx \boxed{113.04 \text{ m}^2}$

Problem #39

$$(4.75)(0.75) = 3.7525$$

The cost is \$3.75

Problem #40

$$1734.72 \div 48 = 36.14$$

Each payment is \$36.14

Problem #41

$$d = vt$$

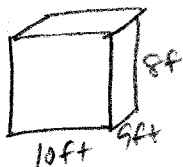
$$\frac{600}{350} = \frac{350 \cdot t}{350}$$

$$t = 1.714285$$

It will take about 1.7 hrs

Problem #42

a.)



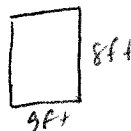
Front/Back



$$A = (10)(9) = 90$$

$$\begin{array}{r} \times 2 \\ \hline 180 \text{ ft}^2 \end{array}$$

Left/Right



$$A = (9)(8) = 72$$

$$\begin{array}{r} \times 2 \\ \hline 144 \text{ ft}^2 \end{array}$$

$$b) 2673 \div 400$$

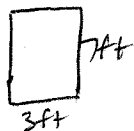
$$\begin{array}{r} 6 \\ 400 \overline{) 2673} \\ \underline{2400} \\ 273 \end{array}$$

7 cans are needed

$$c.) \begin{array}{r} 14 \\ \times 7 \\ \hline 98 \end{array}$$

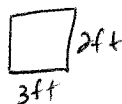
The cost is \$98

Doorway



$$A = (3)(7) = 21 \text{ ft}^2$$

Window



$$A = (3)(2) = 6 \text{ ft}^2$$

$$180 + 144 - 21 - 6 = 297 \times 9 \text{ of this} = 2673$$

2673 ft² will be painted

Problem #43



$$w = l - 4 \quad P = 2l + 2w$$

$$84 = 2l + 2(l - 4)$$

$$84 = 2l + 2l - 8$$

$$84 = 4l - 8$$

$$84 + 8 = 4l - 8 + 8$$

$$\frac{92}{4} = \frac{4l}{4}$$

$$w = l - 4$$

$$w = 23 - 4 = 19$$

$$l = 23$$

The length is 23 ft and the width is 19 ft.

Problem #44



$$l = 3w - 4$$

$$P = 2l + 2w$$

$$48 = 2(3w - 4) + 2w$$

$$48 = 6w - 8 + 2w$$

$$48 = 8w - 8$$

$$48 + 8 = 8w - 8 + 8$$

$$\frac{56}{8} = \frac{8w}{8}$$

$$7 = w$$

$$l = 3w - 4$$

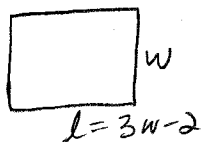
$$l = 3(7) - 4$$

$$l = 21 - 4 = 17$$

The length is 17 in and the width is 7 in

MATH 50 FINAL EXAM REVIEW KEY

Problem #45



$$P = 2l + 2w$$

$$188 = 2(3w - 2) + 2w$$

$$188 = 6w - 4 + 2w$$

$$188 = 8w - 4$$

$$188 + 4 = 8w - 4 + 4$$

$$\frac{192}{8} = \frac{8w}{8}$$

$$24 = w$$

$$l = 3w - 2$$

$$l = 3(24) - 2$$

$$l = 72 - 2 = 70$$

The length is 70 m and the width is 24 m

Problem #46

$$\text{first} = f$$

$$\text{second} = s$$

$$\text{third} = t$$

$$s = 10 + f$$

$$t = f - 7$$

$$f + s + t = 180$$

$$f + 10 + f + f - 7 = 180$$

$$3f + 3 = 180$$

$$3f + 3 - 3 = 180 - 3$$

$$\frac{3f}{3} = \frac{177}{3}$$

$$f = 59$$

$$s = 10 + 59 = 69$$

$$t = 59 - 7 = 52$$

The angles are $59^\circ, 69^\circ, 52^\circ$

Problem #47

$$7l + 3s = 78$$

$$s = 2l$$

$$7l + 3(2l) = 78$$

$$s = 2(6) = 12$$

$$7l + 6l = 78$$

$$\frac{13l}{13} = \frac{78}{13}$$

$$l = 6$$

He sold 6 large prints and 12 small prints

Problem #48

$$0.25q + 0.50h = 6.75$$

$$q = 12 + h$$

$$0.25(12 + h) + 0.50h = 6.75$$

$$q = 12 + 5 = 17$$

$$3 + 0.25 + 0.50h = 6.75$$

$$3 + 0.75h = 6.75$$

$$3 + 0.75h - 3 = 6.75 - 3$$

$$\frac{0.75h}{0.75} = \frac{3.75}{0.75}$$

$$h = 5$$

She has 5 half dollars and 17 quarters

Problem #49

$$1.50s + 2.00l = 109$$

$$s + l = 65$$

$$1.50s + 2.00(65 - s) = 109$$

$$l = 65 - s$$

$$1.5s + 130 - 2s = 109$$

$$l = 65 - 42$$

$$-0.5s + 130 = 109$$

$$= 23$$

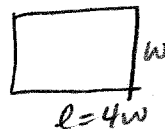
$$-0.5s + 130 - 130 = 109 - 130$$

$$\frac{-0.5s}{-0.5} = \frac{-21}{-0.5}$$

$$s = 42$$

She sold 42 small and 23 large

Problem #50



$$P = 2l + 2w$$

$$300 = 2(4w) + 2w$$

$$300 = 8w + 2w$$

$$\frac{300}{10} = \frac{10w}{10}$$

$$30 = w$$

$$l = 4(30)$$

$$l = 120$$

The width is 30 ft and the length is 120 ft.

Problem #51

$$\frac{358.4 \text{ mi}}{16.4 \text{ gallons}} = \frac{750 \text{ miles}}{x}$$

$$\frac{358.4x}{358.4} = \frac{12300}{358.4}$$

$$x \approx 34.3$$

It will take about 34.3 gallons

Problem #52

$$\frac{2\frac{1}{2} \text{ teaspoons}}{8 \text{ muffins}} = \frac{x}{24 \text{ muffins}}$$

$$\frac{8x}{8} = \frac{60}{8}$$

$$x = 7.5$$

It will take $7\frac{1}{2}$ teaspoons