

Assignment #1 - Solutions

7#

§ 1.1

$$\#2 (12+6) \div 3 = 6$$

$$\#10 3 \times (9-3) \div 6 = 3$$

$$\#16 (3 \times 4 - 2)^2 + (2 - 2 \times 7^2) = 10^2 \quad (96)$$

$$= 4$$

$$\#6 7 + 4 \times 5 - 2 = 25$$

$$\#14 \frac{20-16}{15+9} = \frac{4}{24} = \frac{1}{6}$$

§ 1.2

4:

$$\#2 \frac{28}{56} = \frac{1}{2}$$

$$\#6 \frac{360}{315} = \frac{8}{7}$$

$$\#10 \frac{115}{365} = \frac{23}{73}$$

3:

$$\#2 \frac{7}{4} = 1.75$$

↑ not assigned

$$\#4 \frac{5}{6} = 0.8\bar{3}$$

$$\#6 \frac{7}{9} = 0.\dot{7}$$

↑ not assigned

$$\#8 \frac{19}{15} = 1.2\bar{6}$$

2:

$$\#2 3\frac{2}{5} = 3.4$$

$$\#6 83\frac{1}{3} = 83.\bar{3}$$

1:

$$\#4 253,4856 \approx 253.49$$

$$\#8 39.999 \approx 40.00$$

0:

$$\#2 \frac{264}{4400 \left(\frac{146}{365} \right)} = \frac{264(365)}{4400(146)} = \frac{96360}{642400} = \frac{3}{20} = 0.15$$

$$\#6 8500 \left(1 - 0.17 \times \frac{216}{365} \right) \approx 7644.88$$

#10

$$\frac{2901}{1 - 0.165 \times \frac{73}{365}} = \frac{2901(365)}{365 - 0.165 \times 73} = 3000$$

31.3

A

#2 300% = 3

#6 85% = 0.85

#10 7.5% = 0.075

#2 62½% = 5/8

#6 75% = 3/4

#10 125% = 5/4

#2 0.075 = 7.5%

#6 2 = 200%

#10 0.008 = 0.8%

31.4

A

#2

$$\begin{aligned} \text{Total cost of labour} &= (\# \text{ hours})(\$/\text{hr}) \\ &= (15\frac{1}{2} + 13\frac{3}{4} + 18\frac{1}{2} + 21\frac{1}{4} + 22\frac{3}{4})(12.75) \\ &= \$1169.81 \end{aligned}$$

#4

$$\begin{aligned} \text{Amount of credit} &= (\# \text{ items})(\$/\text{item}) - (\text{discount})(\# \text{ items})(\$/\text{item}) \\ &= 2700(83\frac{1}{3}) - (\frac{3}{8})(2700)(83\frac{1}{3}) \\ &= \$1406.25 \end{aligned}$$

#	Item	Quantity	Cost per Unit	Total
1		96	\$ 0.875	\$184.00
2		330	16 $\frac{2}{3}$ ¢	\$, 55.00
3		144	\$ 1.75	\$252.00
4		240	\$ 1.66	\$400.00
				<u>\$ 791.00</u>

B# 2

$$\begin{aligned}
 \text{a) Average \# litres per purchase} &= \frac{\# \text{ litres}}{\# \text{ purchase}} \\
 &= \frac{56 + 64 + 70 + 54}{4} \\
 &= 61 \text{ litres per purchase}
 \end{aligned}$$

$$\begin{aligned}
 \text{b) Average cost} &= \frac{\text{Sum of (cost/litres) (\$/litres)}}{\text{Total \# of litres}} \\
 &= \frac{56(49) + 64(60.5) + 70(51.5) + 54(54.5)}{56 + 64 + 70 + 54} \\
 &= 54.0 \text{ cents per litres}
 \end{aligned}$$

$$\begin{aligned}
 \text{c) Cost per km} &= \frac{\text{Cost per litres}}{\text{km per litres}} \\
 &= \frac{54.0 \text{ cents per litres}}{8.75 \text{ km per litres}} \\
 &= 6.2 \text{ cents per km}
 \end{aligned}$$

§ 2.1

A

$$\# 2 \quad 6m - 2m - m = 3m$$

$$\# 6 \quad 6p + 2q - 3p - q = 3p + q$$

$$\#10 \quad x + 0.06x = 1.06x$$

B

$$\#2 \quad -7(8a) = -56a$$

$$\#10 \quad 5(2x-4) = 10x-20$$

$$\#6 \quad -6m(-4m) = 24m^2$$

$$\begin{aligned} \#18 \quad (5m-2n)(m-3n) \\ = 5m^2 - 15mn - 2nm + 6n^2 \\ = 5m^2 - 17mn + 6n^2 \end{aligned}$$

$$\begin{aligned} \#20 \quad (a-1)(a^2-2a+1) \\ = a^3 - 2a^2 + a - a^2 + 2a - 1 \\ = a^3 - 3a^2 + 3a - 1 \end{aligned}$$

$$\begin{aligned} \#22 \quad 2(a-1)(2a-3) - 3(3a-2)(a+1) \\ = 2[2a^2 - 3a - 2a + 3] \\ - 3[3a^2 + 3a - 2a - 2] \\ = 4a^2 - 10a + 6 - 9a^2 - 3a + 6 \\ = -5a^2 - 13a + 12 \end{aligned}$$

$$\#26 \quad (-42ab) \div (7ab) = -6$$

$$\begin{aligned} \#30 \quad (-a^3 - 4a^2 - 3a) \div (-a) \\ = a^2 + 4a + 3 \end{aligned}$$

$$C \quad \#2 \quad \frac{1}{2}(3x^2 - x - 1) - \frac{1}{4}(5 - 2x - x^2) \quad \text{for } x = -3$$

$$= \frac{1}{2}(3(-3)^2 - (-3) - 1) - \frac{1}{4}(5 - 2(-3) - (-3)^2)$$

$$= \frac{1}{2}(3 \cdot 9 + 3 - 1) - \frac{1}{4}(5 + 6 - 9)$$

$$= \frac{29}{2} - \frac{1}{4}(2)$$

$$= \frac{29}{2} - \frac{1}{2}$$

$$= \frac{28}{2}$$

$$= 14$$

↑ not assigned!

#10 $\frac{2NC}{P(n+1)}$ for $N=52$, $C=60$, $P=1800$, $n=25$

$$= \frac{2(52)(60)}{1800(25+1)} = \frac{2}{15}$$

#12

$$FV(1-rt) \quad \text{for } FV=1200, r=0.175, t=\frac{256}{365}$$

$$= 1200(1-0.175(\frac{256}{365}))$$

$$= 1052.71$$

#14

$$\frac{FV}{1+rt} \quad \text{for } FV=1752, r=0.152, t=\frac{228}{365}$$

$$= \frac{1752}{1+0.152(\frac{228}{365})} = 1600.08$$

§2.2

A

$$\# 2 \quad 1^5 = 1 \quad \# 6 \quad (\frac{5}{8})^4 = \frac{625}{1296}$$

$$\# 10 \quad (2)^6 = 113.38 \quad \# 14 \quad m^0 = 1$$

B

$$\# 2 \quad (-4)^3 \times (-4) = (-4)^4$$

$$= 256$$

$$\# 6 \quad [(-4)^3]^6 = (-4)^{18}$$

$$= 4^{18}$$

$$\# 10 \quad (-1)^3 (-1)^7 (-1)^5 = (-1)^5$$

$$= -1$$

$$\# 14 \quad (\frac{1}{6})^5 \div (\frac{1}{6})^3 = (\frac{1}{6})^2$$

$$= \frac{1}{36}$$

$$\#28 \left(\frac{a^3 b^2}{x}\right)^4 = \frac{a^{12} b^8}{x^4}$$

$$\#32 \left(\frac{1+i}{i}\right)^{-n} = \left(\frac{i}{1+i}\right)^n \\ = \frac{i^n}{(1+i)^n}$$

§2.3

A #2

$$\sqrt{205.9225} = 14.35$$

$$\#6 \sqrt[16]{0.0001526} \doteq 0.5$$

B #2

$$\sqrt[4]{2401} = 7$$

$$\#6 \sqrt[6]{1.095} \doteq 1.02$$

#10

$$\frac{1 - 1.05^{-36}}{0.05} = \frac{1.05^{36} - 1}{1.05^{36} \cdot 0.05}$$

$$\doteq 16.55$$

§2.4

A

#2

$$3^7 = 2187$$

$$\log_3 2187 = 7$$

$$\#4 10^{-5} = 0.00001$$

$$\log_{10} 0.00001 = -5$$

B

#2

$$\log_3 \frac{1}{81} = -4$$

$$3^{-4} = \frac{1}{81}$$

#4

$$\ln e^2 = 2$$

$$e^2 = e^2$$

$$\text{C} \\ \# 2 \quad \ln 200 \doteq 5.30$$

$$\# 4 \quad \ln [300 (1.10^{15})] \\ = \ln 300 + \ln 1.10^{15} \\ = \ln 300 + 15 \ln 1.10 \\ \doteq 7.13$$

$$\# 6 \quad \ln \left[850 \left(\frac{1.01^{-120}}{0.01} \right) \right]$$

$$= \ln 850 + \ln 1.01^{-120} - \ln 0.01$$

$$= \ln 850 - 120 \ln 1.01 - \ln 0.01$$

$$\doteq 10.16$$

92.5

A

$$\# 2 \quad -7x = 35 \\ x = -5$$

$$\# 6 \quad -\frac{1}{8}x = 7 \\ x = -56$$

10

$$-2x = 7 - 3x \\ x = 7$$

B

$$\# 2 \quad 5 - 4x = -4 - x \\ 9 = 3x \\ 3 = x$$

$$\# 6 \quad 16x - 12 = 6x - 32 \\ 10x = -20 \\ x = -2$$

$$\# 8 \quad -3 + 2x + 5 = 5x - 36 + 14$$

$$24 = 3x$$

$$8 = x$$