

Assignment #1 - Solutions

7#

§ 1.1

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

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

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

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

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

$$= 4$$

§ 1.2

4:

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

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

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

3:

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

↑ not assigned

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

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

↑ not assigned

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

2:

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

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

1:

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

$$\#8 \quad 39.999 \approx 40.00$$

3:

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

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

#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% = $\frac{5}{8}$

#6 75% = $\frac{3}{4}$

#10 125% = $\frac{5}{4}$

#2 0.075 = 7.5%

#6 2 = 200%

#10 0.008 = 0.8%

91.4

A

#2

Total cost of labour = (#hours)(\$/hr)

$$= (15\frac{1}{2} + 13\frac{3}{4} + 18\frac{1}{2} + 21\frac{1}{4} + 22\frac{3}{4})(12.75)$$

$$= \$1169.81$$

#4

Amount of credit = (#items)(\$/item) - (discount)(#items)(\$/item)

$$= 2700(83\frac{1}{3}) - (\frac{3}{8})(2700)(83\frac{1}{3})$$

$$= \$1406.25$$

#	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

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

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

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

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

← not assigned!

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

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

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

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

C

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

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

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

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

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

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

$$= 14$$

← not assigned!

#10

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

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

#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

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

$$1+rt$$

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

§2.2

A

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

$$\# 10 \quad (2.2)^6 = 113.38 \quad \# 14 \quad 1^0 = 1$$

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

$$\sqrt{205.9225} = 14.35$$

$$\#6 \sqrt[6]{0.0001526} = 0.5$$

B #2

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

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

#10

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

$$= 16.55$$

§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

$$16x - 12 = 6x - 32$$

$$10x = -20$$

$$x = -2$$

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

$$24 = 3x$$

$$8 = x$$

Section 2.6

$$\begin{aligned} \textcircled{A2} \quad 5(x-4) - 3(2-3x) &= -54 \\ 5x - 20 - 6 + 9x &= -54 \\ 14x &= -28 \\ x &= -2 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad -3(1-11x) + (8x-15) &= 187 \\ -3 + 33x + 8x - 15 &= 187 \\ 41x &= 205 \\ x &= 5 \end{aligned}$$

$$\begin{aligned} \textcircled{B2} \quad x + \frac{5}{8}x &= 26 \\ \frac{13x}{8} &= 26 \\ x &= 16 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad 2 - \frac{3}{2}x &= \frac{2}{3}x + \frac{31}{9} \\ 2 - \frac{31}{9} &= \frac{2}{3}x + \frac{3}{2}x \\ -\frac{13}{9} &= \frac{13}{6}x \\ -\frac{2}{3} &= x \end{aligned}$$

$$\textcircled{C2} \quad \frac{4}{5}(4-3x) + \frac{53}{40} = \frac{3x}{10} - \frac{7}{8}(2x-3)$$

$$\text{LCD} = 40$$

$$8 \cdot \frac{4}{5} (4-3x) + \frac{53}{40} = \frac{4}{10} 3x - \frac{5}{8} 7(2x-3)$$

$$32(4-3x) + 53 = 12x - 35(2x-3)$$

$$128 - 96x + 53 = 12x - 70x + 105$$

$$76 = 38x$$

$$2 = x$$

$$\textcircled{4} \quad \frac{4}{3}(3x-2) - \frac{3}{5}(4x-3) = \frac{11}{60} + 3x$$

$$20 \cdot \frac{4}{3} (3x-2) - \frac{3}{5} (4x-3) = \frac{11}{60} + 60(3x)$$

$$80(3x-2) - 36(4x-3) = 11 + 180x$$

$$240x - 160 - 144x + 108 = 11 + 180x$$

$$-63 = 84x$$

$$-\frac{3}{4} = x$$

$$\textcircled{D2} \quad Q = \frac{P-q}{2} \text{ for } P$$

$$2Q = P - q$$

$$P = 2Q + q$$

$$\textcircled{6} \quad P = S(1+i)^{-n}$$

$$(1+i)^n = \frac{S}{P}$$

$$1+i = \sqrt[n]{\frac{S}{P}}$$

$$i = \sqrt[n]{\frac{S}{P}} - 1$$