201, H.W#01
Date: 03/03/04

1.1
Ans:

(a) $4.65735\ m = \underline{4.66\ m}$
(b) $55.578\ s = \underline{55.6\ s}$
(c) $4555\ N = \underline{4.56 \times 10^3\ N}$
(d) $2768\ kg = \underline{2.76 \times 10^3\ kg}$

1.9
Ans:

$$1\ Pa = 1\ N/m^2 = \frac{1\ N}{m^2} \times \frac{1\ m^2}{10.76\ ft^2} \times \frac{lb}{4.448\ N}$$
$$= 0.0209\ lb/ft^2$$
$$= \underline{20.9 * 10^{-3}\ lb/ft^2}$$

$$14.7\ lb/in^2 = 14.7 * \frac{lb}{in^2} * \frac{144\ in^2}{ft^2} * \frac{10.76\ ft^2}{1\ m^2} * \frac{4.448\ N}{lb}$$
$$= 101.3\ N/m^2$$
$$= \underline{101.3\ Pa}$$

1.17
Ans:

$$m = \frac{W}{g}$$

(a). $20\ mN = 20 * mN * \frac{1\ N}{1000\ mN} = .02\ N$

$\therefore m = \frac{.02\ N}{9.8\ m/s^2}$

CE 201, H.W #01

Date: 03/03/04

1.17

(b) $150\ kN = 150 * 10^3\ N$

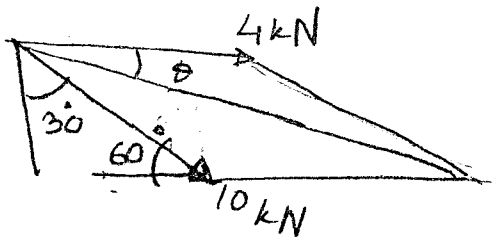
$$m = \frac{150 * 10^3 * kg * m/sec^2}{9.8\ m/sec^2} = 15.3 * 10^3\ kg \quad (Ans.)$$

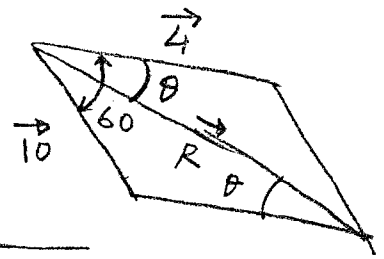
(c) $60\ MN = 60 \times 10^6\ N$

$$m = \frac{60 * 10^6 * kg * m/sec^2}{9.8\ m/sec^2}$$

$$= 6.12 * 10^6\ kg. \quad (Ans.)$$

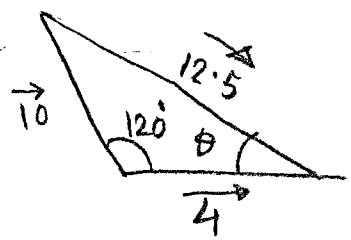
.1





$$\vec{R} = \sqrt{(4)^2 + (10)^2 + 2.(4)(10)\cos 60^\circ}$$

$$= 12.5\ kN$$



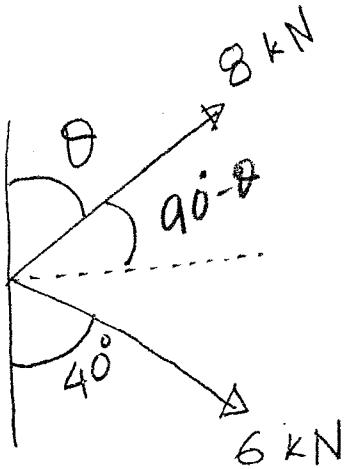
Here $\frac{10}{\sin\theta} = \frac{12.5}{\sin 120}$

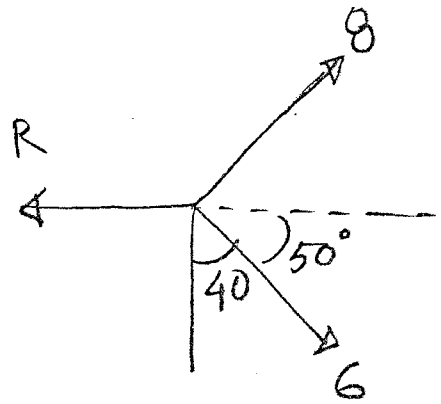
$$\Rightarrow \sin\theta = \frac{10 \sin 120}{12.5} = 0.69$$

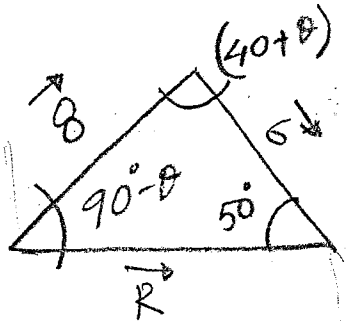
$$\therefore \theta = \sin^{-1} 0.69$$

$$= 43.85^\circ$$

2·8







Here $\frac{8}{\sin 50} = \frac{6}{\sin(90-\theta)}$

$\Rightarrow \sin(90-\theta) = \frac{6 * \sin 50}{8} = .574$

$\therefore 90-\theta = \sin^{-1}(.574) = 35$

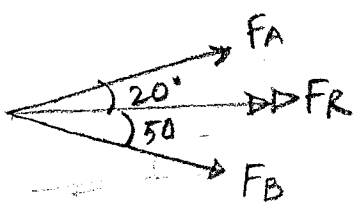
$\therefore \theta = \underline{54.93^\circ}$

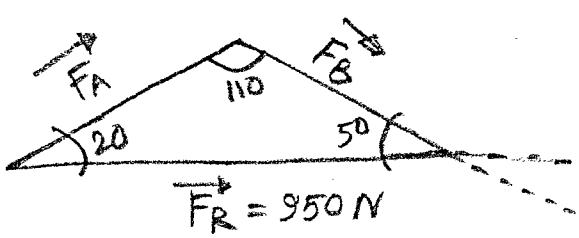
$40+\theta = 40+54.93 = 94.93^\circ$

$\therefore \frac{R}{\sin 94.93} = \frac{8}{\sin 50}$

$\Rightarrow R = \underline{10.4}$

2.2





Here $\frac{950}{\sin 110} = \frac{F_A}{\sin 50}$

$\Rightarrow F_A = \underline{774.45\ N}$

And $\frac{950}{\sin 110} = \frac{F_B}{\sin 20} \Rightarrow F_B = \underline{345.77\ N}$