

1. A chemist must prepare 540 milliliters of a chemical solution. It is to be made up of 4 parts acid and 5 parts distilled water. If all parts are equal, then how much of water should be used?

- (a) 300 milliliter See Ex 1: Page 46 (correct)
 (b) 240 milliliter
 (c) 340 milliliter
 (d) 200 milliliter
 (e) 320 milliliter

Let x be the number of each milliliters in each part then

$$4x + 5x = 540$$

$$x = \frac{540}{9} = 60$$

$$\begin{aligned} \text{So amount of water} &= 5x \\ &= 5(60) \\ &= 300 \end{aligned}$$

2. The monthly revenue of a certain company is given by $R = 800p - 7p^2$, where p is the price in dollars of the product the company manufactures. At what price will the revenue be \$10,000 if the price must be greater than \$50?

- (a) 100 See Q # 31, Page 51 (correct)
 (b) 150
 (c) 75
 (d) 95
 (e) 50

$$R = 10,000$$

$$R = 800p - 7p^2$$

$$\text{So, } 800p - 7p^2 = 10,000$$

$$7p^2 - 800p + 10,000 = 0$$

$$p = 100 \text{ or } 14.28$$

Since price is greater than \$50
 So answer is $\boxed{p = 100}$

3. A company invests a total of \$30,000 of surplus funds at two annual rates of interest: 5% and $6\frac{3}{4}\%$. It wishes an annual yield of no less than $6\frac{1}{2}\%$. What is the least amount of money that the company must invest at the $6\frac{3}{4}\%$ rate?

(a) at least \$25714.29 See Q# 7, Page 57 (correct)

(b) at least \$25174.29

(c) at most \$25714.29

(d) at least \$27541.29

(e) at most \$27541.29

$$6\frac{3}{4}\% x + 5\%(30000 - x) \geq 6\frac{1}{2}\%(30000)$$

$$x \geq 25714.29$$

4. Suppose a company offers you a sales position with your choice of two methods of determining your yearly salary. The first method pays \$35,000 plus a bonus of 3% of your yearly sales. The second method pays a straight 5% commission on your sales. If the yearly sales is greater than \$1,750,000, then which of the following statements is **True**?

See Q# 12, Page 58

(a) Second method is better because early sales is greater than \$1,750,000 (correct)

(b) First method is better because early sales is greater than \$1,750,000

(c) Both methods are equal

(d) First method is better because yearly sales less than \$1,750,000

(e) Second method is better because yearly sales less than \$1,750,000

if x is Yearly Sales

$$35000 + 3\% x \leq 5\% x$$

$$x \geq 1750000$$

5. A straight line has slope 3 and y -intercept $(0, 1)$. Then which of the following statement is **WRONG**.

- (a) The point $(-2, -1)$ lies on the line. See Q 62, Page 135 (correct)
 (b) The point $(-1, -2)$ lies on the line.
 (c) The line is perpendicular to the line $x + 3y - 6 = 0$
 (d) The line intercepts the x -axis at $x = -\frac{1}{3}$
 (e) The line is parallel to $3x - y + 2 = 0$

Put $(-2, -1)$ in Eq (i)

$$\begin{aligned} -1 &= 3(-2) + 1 \\ &= -6 + 1 \end{aligned}$$

$$-1 \neq -5$$

So $(-2, -1)$ does not lie on the line.

$$m = 3, \quad c = 1$$

$$y = mx + c$$

$$y = 3x + 1 \quad \text{--- (i)}$$

6. The average daily cost, C , for a room at a city hospital has risen by \$59.82 per year for the years 1990 through 2000. If the average cost in 1996 was \$1128.50, what is an equation which describes the average cost during this decade, as a function of the number of years, T , since 1990?

- (a) $C = 59.82T + 769.58$ See Q # 71, Page 135 (correct)
 (b) $C = 769.58T + 59.82$
 (c) $T = 59.82C + 769.58$
 (d) $T = 769.58C + 59.82$
 (e) $C = 59.82T + 1128.5$

$$m = 59.82$$

$$(6, 1128.50)$$

$$\begin{aligned} C &= 59.82(T - 6) + 1128.5 \\ &= 59.82T + 769.58 \end{aligned}$$