Home Work 1

Solution

(a) $\dfrac{120 \text{ boxes}}{40 \text{ hours}} = 3.0 \text{ boxes/hour}$

(b) $\dfrac{125 \text{ boxes}}{40 \text{ hours}} = 3.125 \text{ boxes/hour}$

(c) Change in productivity $= 0.125 \text{ boxes/hour}$

(d) Percentage change $= \dfrac{0.125 \text{ boxes}}{3.0} = 4.166\%$

Question 1.5

(a) $\dfrac{\text{Units produced}}{\text{Input}} = \dfrac{100 \text{ pkgs}}{5} = 20 \text{ pkgs/hour}$

(b) $\dfrac{133 \text{ pkgs}}{5} = 26.6 \text{ pkgs per hour}$

(c) Increase in productivity $= \dfrac{6.6}{20} = 33.0\%$

	Last Year	This Year
Production	1,000	1,000
Labor hr. @ $10	$3,000	$2,750
Resin @ $5	250	225
Capital cost/month	100	110
Energy	1,500	1,425
	$4,850	$4,510

$$\frac{[(1,000/4,850) - (1,000/4,510)]}{(1,000/4,850)} =$$

$$\frac{0.206 - 0.222}{0.206} = \frac{-0.016}{0.206} = 0.078 \text{ fewer resources}$$

$$\Rightarrow 7.8\% \text{ improvement*}$$

* with rounding to 3 decimal places.

(a) Labor productivity = 1,000 tires/400 hours = 2.5 tires/hour.

(b) Multifactor productivity is 1,000 tires/(400 × $12.50 + 20,000 × $1 + $5,000 + $10,000) = 1,000 tires/$40,000 = 0.025 tires/dollar.

(c) Multifactor productivity changes from 1,000/40,000 to 1,000/39,000, or from 0.025 to 0.02564; the ratio is 1.0256, so the change is a 2.56 percent increase.

Multifactor productivity is:

375 autos/[($20 × 10,000) + ($1,000 × 500) + ($3 × 100,000)] = 375/(200,000 + 500,000 + 300,000) = 375/1,000,000 = .000375 autos per dollar of inputs