

§ 9B. LINEAR MODELLING

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17.  $-2 \text{ m/DAY} \times 8 \text{ DAYS} = -16 \text{ m (DECREASE)}$

$-2 \text{ m/DAY} \times 15 \text{ DAYS} = -30 \text{ m (DECREASE)}$

18.  $65 \text{ mi/hr} \times 3.5 \text{ hr} = 227.5 \text{ mi}$

$65 \text{ mi/hr} \times 6.8 \text{ hr} = 442 \text{ mi}$

20.  $-120 \text{ GALL/¢} \times 10 \text{ ¢} = -1200 \text{ GALLONS (LESS)}$

$-120 \text{ GALL/¢} \times -5 \text{ ¢} = 600 \text{ GALLONS (MORE)}$

21.  $3.5 \text{ m/hr} \times 6.3 \text{ hr} = 22.05 \text{ m}$

$3.5 \text{ m/hr} \times 9.8 \text{ hr} = 34.3 \text{ m}$

23.  $p = 15000 + 800t$

IN 3 YEARS :  $p = 15000 + 800(3) = \boxed{\$17,400}$

24.  $r = 50.4 - 0.05t$  ( $t = \text{YEARS AFTER 2006}$ )

IN 2020 ,  $r = 50.4 - 0.05(14) = \boxed{49.7 \text{ s}}$

25.  $s = 40 - 1.1d = 0$

$$\frac{40}{1.1} = \frac{1.1d}{1.1}$$

$$\boxed{36.36 = d} \approx \underline{36 \text{ inches}}$$

26.  $C = 800 + 240m = 3680$

$$240m = 2880$$

$$\boxed{m = 12} \quad \underline{12 \text{ MONTHS}}$$

27. note:  $\$1.50 / 5 \text{ min} = \$0.30 / \text{min.}$

$$c = 8 + .3t = 25$$

$$.3t = 17$$

$$\boxed{t = 56.7 \text{ min}}$$

28.  $p = 2000 + 200t$ , where  $t = \text{YEARS AFTER } 1980.$

in 2010,  $t = 30 \rightarrow p = 2000 + 200(30) = \boxed{8000}$

29. weight increases 12.5 lbs/yr

$$W = 2.5 + 12.5t$$

$$t = 5 : W = 2.5 + 12.5(5) = \boxed{65 \text{ lbs}}$$

$$t = 10 : W = 2.5 + 12.5(10) = \boxed{127.5 \text{ lbs}}$$

PROBABLY NOT ACCURATE  
SINCE PUPPIES GROW A  
LOT AND ADULT DOGS  
DON'T

30.

$$C = 200 + 150m = 6500$$

$$150m = 6300$$

$$m = 42$$

AFTER 42 MONTHS YOU BEGIN PAYING MORE THAN THE BIKE'S PURCHASE PRICE

31.

$$p = -350 + 10t = 0$$

$$10t = 350$$

$$t = 35 \text{ TIX TO BREAK EVEN}$$

32.

$$p = -100 + 4t = 0$$

$$4t = 100$$

$$t = 25 \text{ TIX TO BREAK EVEN}$$

33.

$$V = 1200 - 75t = 0$$

$$1200 = 75t$$

$$16 = t$$

YEARS

34.

$$E = 2000 \text{ TONS} \cdot \frac{3 \text{ } \cancel{\text{oz}}}{1 \cancel{\text{TON}}} \cdot \frac{p \text{ } \$}{1 \cancel{\text{oz}}} - 2000 \cancel{\text{ TONS}} \cdot \frac{1000 \text{ } \$}{1 \cancel{\text{TON}}}$$

$$E = 6,000p - 2,000,000 = 0$$

$$6000p = 2,000,000$$

$$p = \$333.33/\text{oz}$$

TO BREAK EVEN.