Sections 5.1-5.4
Word Problems Extra Practice

1.   A landscape supply business charges $30 to deliver mulch. The mulch costs
       $23 per cubic yard.
            a.   Write an equation in slope-intercept form that gives the total
                   cost (in dollars) of having mulch delivered to a site as a function
                   of the number of cubic yards ordered.
            b.   Find the cost of having 8 cubic yards delivered.

2.   Your school club is making cookies for an upcoming school dance. On the
       morning of the dance, your group makes 5 batches of dough that yield 7.5
       dozen cookies. In the afternoon, your group makes 7 batches of dough that
       yields 10.5 dozen cookies.
            a.   Write an equation in slope-intercept form that gives the
                   number of dozen cookies as a function of the number of
                   batches made.
            b.   How many dozen cookies can be made from 12 batches of
                   dough?
            c.   If 12 cookies are in a dozen, how many cookies will 12 batches
                   make?

3.   A newspaper charges a flat rate to place a 3-line ad in the classified section
       of the newspaper and then charges a per line fee for any additional lines.
       One person placed a 4-line ad for $17.10 and another person placed a 6-line
       ad for $22.50.
            a.   Write an equation in slope-intercept form that gives the total
                   cost (in dollars) as a function of the number of lines in the ad.
            b.   What does the slope in this equation represent?
            c.   What does the y-intercept in this equation represent?
            d.   Find the cost of placing a 10-line ad.

4.   From 1990 to 2000, the number of visits by people to the Grand Canyon
       increased by about 23.9 thousand visits per year. In 2000, there were
       1102.4 thousand visits to the park.
            a.   Write an equation in slope-intercept form that gives the
                   number of visits (in thousands) as a function of the number of
                   years since 1990.
            b.   How many visits were made to the park in 1995?

① base price = $30 (y-intercept)
 $23 per yard (slope)

ⓐ $y = 23x + 30$

ⓑ $y = 23(8) + 30$
 $y = 184 + 30$
 $y = \$214$

$\begin{array}{r} \overset{2}{23} \\ \times\ 8 \\ \hline 184 \\ +\ 30 \\ \hline 214 \end{array}$

② 5 batches → 7.5 dozen
 7 batches → 10.5 dozen

(5, 7.5) (7, 10.5)

ⓐ $m = \dfrac{10.5 - 7.5}{7 - 5} = \dfrac{3}{2}$

 $y = mx + b$
 $7.5 = \frac{3}{2}(5) + b$
 $7.5 = 7.5 + b$
 $0 = b$
 $y = \frac{3}{2}x + 0$ or $y = \frac{3}{2}x$

ⓑ $y = \frac{3}{2}(12) + 0$
 $y = 18 + 0$
 18 dozen cookies

ⓒ 18×12
 216 cookies

$\begin{array}{r} 18 \\ 12 \\ \hline 36 \\ 180 \\ \hline 216 \end{array}$

③ 4 lines → $17.10
 6 lines → 22.50

(4, 17.10) and (6, 22.50)

ⓐ $m = \dfrac{22.50 - 17.10}{6 - 4} = \dfrac{5.40}{2} = 2.70$

 $y = mx + b$
 $17.10 = 2.70(4) + b$
 $17.10 = 10.80 + b$
 $6.30 = b$
 $y = 2.70x + 6.30$

ⓑ $2.70 is the cost per additional line

ⓒ $6.30 is the flat rate for the first 3 lines

ⓓ $y = 2.70(10) + 6.30$
 $y = 27 + 6.30$
 $y = \$33.30$

④ $m = 23.9$

 2000 → 1102.4 visits
 (10, 1102.4)
 (bc it's 10 years since 1990

ⓐ $y = mx + b$
 $1102.4 = 23.9(10) + b$
 $1102.4 = 239 + b$
 $863.4 = b$
 $y = 23.9x + 863.4$

ⓑ 1995 means x = 5
 $y = 23.9(5) + 863.4$
 $y = 119.5 + 863.4$
 $y = 982.9$ thousand visits