1. A restaurant occupying the top floor of a skyscraper rotates as diners enjoy the view. Ling and Sarah notice that they began their meal at 7:00 P.M. looking due north. At 7:45 P.M. they had rotated 180° to a view that was due south. At this rate, how many degrees will the restaurant rotate in 1 hour?

   A.   90°
   B.   180°
   C.   240°
   D.   270°
   E.   400°

$$\frac{45}{180} = \frac{60}{X}$$

$$45x = 180 \cdot 60$$

60 min

$$X = \frac{180 \cdot 60}{45}$$

2. If 12 vases cost $18.00, what is the cost of 1 vase?

   F. $0.67
   G. $1.05
   H. $1.33
   J. $1.50
   K. $1.60

$$12x = 18$$

$$\frac{12}{18} = \frac{1}{X} \quad \frac{\# \text{ of v's}}{\$}$$

3. Your friend shows you a scale drawing of her apartment. The drawing of the apartment is a rectangle 4 inches by 6 inches. Your friend wants to know the length of the shorter side of the apartment. If she knows that the length of the longer side of the apartment is 30 feet, how many feet long is the shorter side of her apartment?

   A. 9
   B. 20
   C. 24
   D. 30
   E. 45

$$\frac{4}{6} = \frac{x}{30} \qquad 6x = 120$$
$$x = 20$$

4. A company earned a profit of $8.0 million each year for 3 consecutive years. For each of the next 2 years the company earned a profit of $9.0 million. For this 5-year period, what was the company's average yearly profit, in millions of dollars?

   F. 8.2
   G. 8.25
   H. 8.4
   J. 8.5
   K. 8.6

$$8 \qquad 9$$
$$8 \qquad 9$$
$$8$$

$$Avg = \frac{42}{5} = \boxed{8.4}$$

5. A company rents moving vans for a rental fee of $25.00 per day with an additional charge of $0.30 per mile that the van is driven. Which of the following expressions represents the cost, in dollars, of renting a van for 1 day and driving it *m* miles?

A. $0.30m + 25$
B. $25m + 30$
C. $30m + 25$
D. $25.30m$
E. $55m$

$25 + .3m$

6. The figure below shows quadrilateral *ABCD*. What is the measure of ∠*C* ?

F. $120°$
G. $115°$
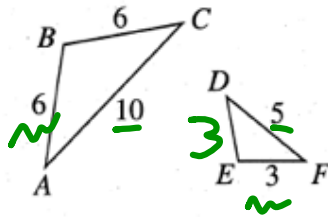H. $105°$
J. $100°$
K. $80°$
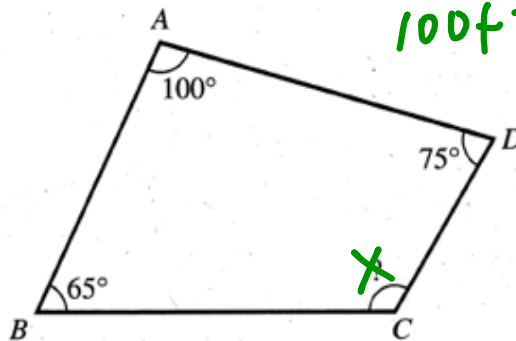
$100 + 75 + 65 + x = 360$

$240 + x = 360$

$x = 120$

7. In the figure below, $\triangle ABC$ and $\triangle DEF$ are similar → proportion
triangles with the given side lengths in meters. What is
the perimeter, in meters, of $\triangle DEF$?

B — 6 — C
6 / 10
A

D
3 / 5
E 3 F

A. 3
B. 8
C. 11
D. 12
E. 13

$3+3+5$

8. The relationship between temperature in degrees
Fahrenheit, F, and temperature in degrees Celsius, C,
is expressed by the formula $F = \frac{9}{5}C + 32$. Calvin reads
a temperature of 38° on a Celsius thermometer. To the
nearest degree, what is the equivalent temperature on a
Fahrenheit thermometer?

F.   36°
G.   53°
H.   68°
J.   70°
K. 100°

$F = \frac{9}{5}(38) + 32 = 100.4$

9. Nick needs to order 500 pens from his supplier. The catalog shows that these pens come in cases of 24 boxes with 10 pens in each box. Nick knows that he may NOT order partial cases. What is the fewest number of cases he should order?

A. 2
B. 3
C. 18
D. 21
E. 50

240
240
240

10. When $a + b = 6$, what is the value of

$$2(a + b) + \frac{a+b}{6} + (a + b)^2 - 2 ?$$

F. 23
G. 37
H. 38
J. 43
K. 47

$$2(6) + \frac{6}{6} + 6^2 - 2$$