

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°

↓
60

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

$$45x = 180 \cdot 60$$

$$x = \frac{180 \cdot 60}{45} = 240$$

2. $3x^3 \cdot 2x^2y \cdot 4x^2y$ is equivalent to:

- F. $9x^7y^2$
 G. $9x^{12}y^2$
 H. $24x^7y^2$
 J. $24x^{12}y$
 K. $24x^{12}y^2$

$$\underline{24}x^7$$

$$3 \cdot 2 \cdot 4$$

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

4 in 6 in

x 30 ft

$$\frac{4}{6} = \frac{x}{30}$$

$$6x = 120$$

$$x = 20$$

4. So far, a student has earned the following scores on four 100-point tests this grading period: 65, 73, 81, and 82. What score must the student earn on the fifth and last 100-point test of the grading period to earn an average test grade of 80 for the 5 tests?

- F. 75
- G. 76
- H. 78
- I. 99**
- J. The student cannot earn an average of 80.

65
73
81
82
+ 82

301

sum
= 80(5)
= 400

99

12. If $12x = -8(10 - x)$, then $x = ?$

F. 20

G. 8

H. $7\frac{3}{11}$

J. $6\frac{2}{13}$

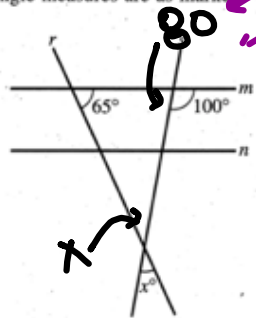
K. -20

$$\begin{array}{r} 12x = -80 + 8x \\ -8x \quad \quad -8x \\ \hline 4x = -80 \\ x = -20 \end{array}$$

$$4x = -80$$

$$x = -20$$

17. In the figure below, lines m and n are parallel, transversals r and s intersect to form an angle of measure x° , and 2 other angle measures are as marked. What is the value of x ?



- A. 15
B. 25
C. 35
D. 65
E. 80

$$65 + x + 80 = 180$$

$$145 + x = 180$$

$$x = 35$$

31. What is the x -coordinate of the point in the standard (x,y) coordinate plane at which the 2 lines $y = 2x + 6$ and $y = 3x + 4$ intersect?

- A. 1
 B. 2
 C. 4
 D. 6
 E. 10

$$2x + 6 = 3x + 4$$

$$6 = x + 4$$

$$2 = x$$

45. What is the distance in the standard (x,y) coordinate plane between the points $(1,0)$ and $(0,5)$?

- A. 4
 B. 6
 C. 16
 D. 36
 E. $\sqrt{26}$

$$(x_1, y_1) \quad (x_2, y_2)$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(0 - 1)^2 + (5 - 0)^2} = \sqrt{26}$$