1. On level ground, a vertical rod 12 feet tall casts a shadow 4 feet long, and at the same time a nearby vertical flagpole casts a shadow 12 feet long. How many feet tall is the flagpole?

    A. 4
    B. 8
    C. 12
    D. 20
    E. 36

$$\frac{12}{4} = \frac{h}{12}$$

$$\frac{4h}{4} = \frac{144}{4}$$

$$h = 36$$

3. If $x = -5$, what is the value of $\frac{x^2 - 1}{x + 1}$?

A. -6

B. -4

C. 4

D. $5\frac{4}{5}$

E. 19

$$\frac{(-5)^2 - 1}{-5 + 1} = \frac{24}{-4} = -6$$

→ length around the figure

6. What is the perimeter, in centimeters, of a rectangle with length 15 cm and width 6 cm ?

F. 21
G. 30
H. 42
J. 90
K. 180

$$15+6+15+6$$

$$=42$$

6

15 | | 15

6

8. For what value of r is the equation $\frac{8}{12} = \frac{10}{r}$ true?

F. 3
G. 6
H. 14
J. 15
K. 18

$$\frac{8r = 120}{8} \quad \frac{120}{8}$$

$$r = 15$$

9. If $12(x - 11) = -15$, then $x = ?$

A. $-\frac{49}{4}$
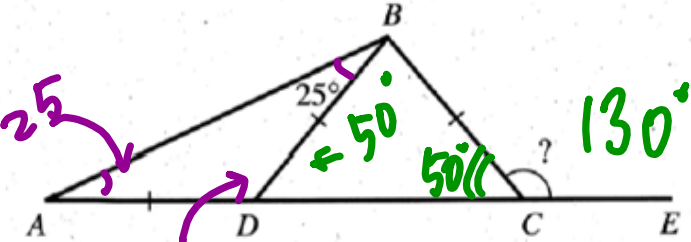
B. $-\frac{13}{6}$

C. $-\frac{5}{4}$

D. $-\frac{1}{3}$

E. $\frac{39}{4}$

$12X - 132 = -15$

$12X = 117$

$X = \frac{117}{12} = \frac{39}{4}$

10. In the figure below, A, D, C, and E are collinear. $\overline{AD}$, $\overline{BD}$, and $\overline{BC}$ are all the same length, and the angle measure of $\angle ABD$ is as marked. What is the degree measure of $\angle BCE$?

F.   50°
G. 100°
H. 105°
J. 130°
K. 160°

(handwritten annotations: 25, 25°, ←50, 50, 130°, ?, 180−25−25 = 130)

22. If $x + y = 32$, and $x - y = 12$, then $y = ?$

   F.   6

   G. 10

   H. 20

   J. 22

   K. 44

$$x + y = 32$$
$$- (x - y = 12)$$
$$\overline{}$$
$$2y = 20$$

$$y = 10$$

38. The coordinates of the endpoints of $\overline{GH}$, in the standard (x,y) coordinate plane, are $(-8, -3)$ and $(2, 3)$. What is the x-coordinate of the midpoint of $\overline{GH}$?

F. -6
G. -3
H. 0
J. 3
K. 5

$$\frac{-8+2}{2} = \frac{-6}{2} = -3$$

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

$$\text{Midpt.} \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$