Name: _____

G.MG.A.3: Perimeter

1 The second side of a triangle is two more than the first side, and the third side is three less than the first side. Which expression represents the perimeter of the triangle?
1) $x + 5$
2) $2x - 1$
3) $3x - 1$
4) $x^2 - x - 6$

2 What is the perimeter of a square whose diagonal is $3\sqrt{2}$?
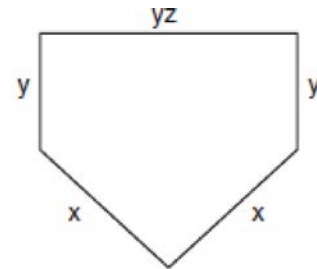1) 18
2) 12
3) 9
4) 6

3 The perimeter of a square is 56. Express the length of a diagonal of the square in simplest radical form.

4 What is the perimeter of a rhombus whose diagonals are 16 and 30?
1) 92
2) 68
3) 60
4) 17

5 The lengths of the sides of home plate in a baseball field are represented by the expressions in the accompanying figure.

Which expression represents the perimeter of the figure?
1) $5xyz$
2) $x^2 + y^3 z$
3) $2x + 3yz$
4) $2x + 2y + yz$

6 The Pentagon building in Washington, D.C., is shaped like a regular pentagon. If the length of one side of the Pentagon is represented by $n + 2$, its perimeter would be represented by
1) $5n + 10$
2) $5n + 2$
3) $n + 10$
4) $10n$

7 Pentagon $ABCDE$ is similar to pentagon $FGHIJ$. The lengths of the sides of $ABCDE$ are 8, 9, 10, 11, and 12. If the length of the longest side of pentagon $FGHIJ$ is 18, what is the perimeter of pentagon $FGHIJ$?
1) 50
2) 56
3) 75
4) 100

8 In the accompanying diagram, $\overline{CD}$ is an altitude of $\triangle ABC$. If $CD = 8$, $m\angle A = 45$, and $m\angle B = 30$, find the perimeter of $\triangle ABC$ in simplest radical form.
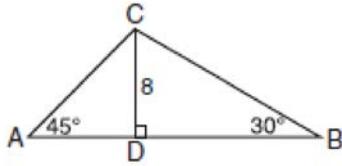
9 In the accompanying diagram, the perimeter of $\triangle MNO$ is equal to the perimeter of square $ABCD$. If the sides of the triangle are represented by $4x + 4$, $5x - 3$, and 17, and one side of the square is represented by $3x$, find the length of a side of the square.
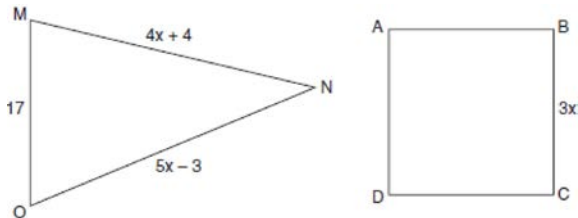
10 The plan of a parcel of land is represented by trapezoid $ABCD$ in the accompanying diagram. If the area of $\triangle ABE$ is 600 square feet, find the minimum number of feet of fence needed to completely enclose the entire parcel of land, $ABCD$.
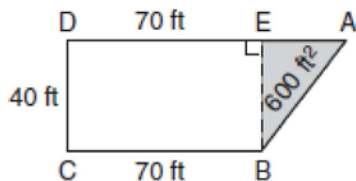
11 Manuel plans to install a fence around the perimeter of his yard. His yard is shaped like a square and has an area of 40,000 square feet. The company that he hires charges $2.50 per foot for the fencing and $50.00 for the installation fee. What will be the cost of the fence, in dollars?

12 An engineer measured the dimensions for a rectangular site by using a wooden pole of unknown length x. The length of the rectangular site is 2 pole measures increased by 3 feet, while the width is 1 pole measure decreased by 4 feet. Write an algebraic representation, in terms of x, for the perimeter of the site.

13 Mr. James wanted to plant a garden that would be in the shape of a rectangle. He was given 80 feet of fencing to enclose his garden. He wants the length to be 10 feet more than twice the width. What are the dimensions, in feet, for a rectangular garden that will use exactly 80 feet of fencing?

G.MG.A.3: Perimeter
Answer Section

1 ANS: 3
First side: x
Second side: $x + 2$. $x + x + 2 + x - 3 = 3x - 1$
Third side: $x - 3$

REF: 060611a

2 ANS: 2
$$s^2 + s^2 = (3\sqrt{2})^2$$
$$2s^2 = 18$$
$$s^2 = 9$$
$$s = 3$$

REF: 011420ge

3 ANS:

$14\sqrt{2}$. The length of each side of the square is $\frac{56}{4} = 14$. $c = \sqrt{14^2 + 14^2} = \sqrt{2 \times 14^2} = 14\sqrt{2}$

REF: 010736a

4 ANS: 2
$$\sqrt{8^2 + 15^2} = 17$$

REF: 061326ge

5 ANS: 4   REF: 010603a
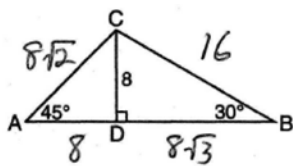
6 ANS: 1
$5(n + 2) = 5n + 10$

REF: 089905a

7 ANS: 3

The perimeter of *ABCDE* is 50 (8 + 9 + 10 + 11 + 12). *FGHIJ* is 1.5 $(\frac{18}{12})$ times larger than *ABCDE*.

$50 \times 1.5 = 75$

REF: 080814a

8 ANS:

$24 + 8\sqrt{2} + 8\sqrt{3}$.   . Because $\triangle CDA$ is an isosceles right triangle, the ratio of its hypotenuse to its legs is $\sqrt{2}:1:1$. Because $\triangle CDB$ is a 30°-60°-90° triangle, the ratio of its hypotenuse to its legs is $2:\sqrt{3}:1$. $24 + 8\sqrt{2} + 8\sqrt{3}$

REF: 060931b

9 ANS:

$$4x + 4 + 5x - 3 + 17 = 4(3x)$$

18. $9x + 18 = 12x$. $s = 3x = 3(6) = 18$

$$x = 6$$

REF: 080537a

10 ANS:

260. If $CD = 40$, then $BE = 40$, which is the base of the shaded triangle. To find the height, or the length of $\overline{EA}$,

$600 = \dfrac{1}{2} 40h$. $\triangle ABE$ is a multiple of the 3-4-5 triangle, with legs of 30 and 40 and a hypotenuse of 50.

$h = 30$

The perimeter of trapezoid ABCD is $70 + 40 + 70 + 30 + 50 = 260$.

REF: 060134a

11 ANS:

2,050. If the yard has an area of 40000 square feet, the length of one side of the square yard is 200 feet. The yard has a perimeter of 800 feet. $800 \times 2.5 + 50 = \$2050$

REF: 080639a

12 ANS:

$6x - 2$. $(2x + 3) + (x - 4) + (2x + 3) + (x - 4)$

$6x - 2$

REF: 080124a

13 ANS:

10×30.

$$l + w + l + w = 80$$
$$(2w + 10) + w + (2w + 10) + w = 80$$
$$6w + 20 = 80$$
$$w = 10$$

$$l = 2w + 10$$
$$l = 2(10) + 10$$
$$l = 30$$

REF: 060536a