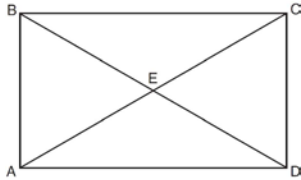


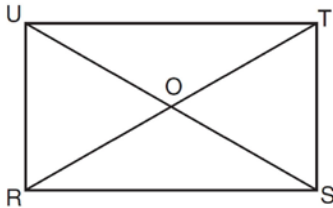
**G.CO.C.11: Special Quadrilaterals 1a**

- 1 What is the perimeter of a square whose diagonal is  $3\sqrt{2}$ ?  
1) 18 2) 12 3) 9 4) 6
- 2 A builder is building a rectangular deck with dimensions of 16 feet by 30 feet. To ensure that the sides form  $90^\circ$  angles, what should each diagonal measure?  
1) 16 ft 2) 30 ft 3) 34 ft 4) 46 ft
- 3 As shown in the diagram of rectangle  $ABCD$  below, diagonals  $\overline{AC}$  and  $\overline{BD}$  intersect at  $E$ .



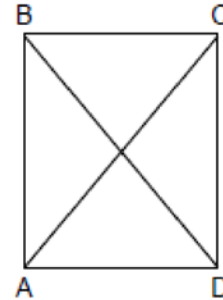
If  $\overline{AE} = x + 2$  and  $\overline{BD} = 4x - 16$ , then the length of  $\overline{AC}$  is  
1) 6 2) 10 3) 12 4) 24

- 4 In the diagram below of rectangle  $RSTU$ , diagonals  $\overline{RT}$  and  $\overline{SU}$  intersect at  $O$ .



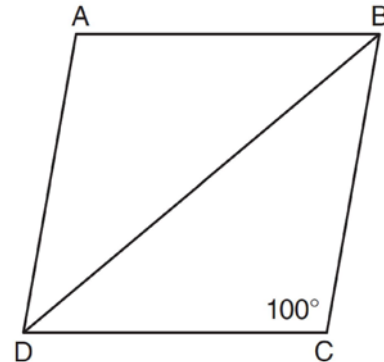
If  $\overline{RT} = 6x + 4$  and  $\overline{SO} = 7x - 6$ , what is the length of  $\overline{US}$ ?  
1) 8 2) 2 3) 16 4) 32

- 5 In the accompanying diagram of rectangle  $ABCD$ ,  $m\angle BAC = 3x + 4$  and  $m\angle ACD = x + 28$ .



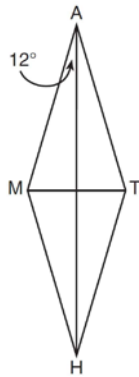
What is  $m\angle CAD$ ?  
1) 12 2) 37 3) 40 4) 50

- 6 In the diagram below of rhombus  $ABCD$ ,  $m\angle C = 100$ .



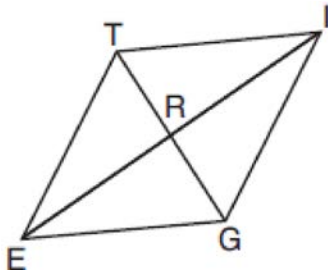
What is  $m\angle DBC$ ?  
1) 40 2) 45 3) 50 4) 80

- 7 In the diagram below,  $MATH$  is a rhombus with diagonals  $\overline{AH}$  and  $\overline{MT}$ .



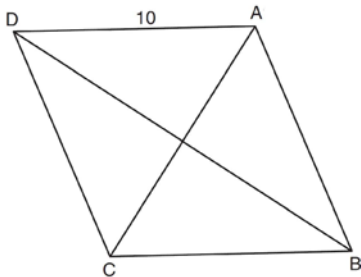
If  $m\angle HAM = 12$ , what is  $m\angle AMT$ ?

- 1) 12 2) 78 3) 84 4) 156
- 8 In rhombus  $TIGE$ , diagonals  $TG$  and  $IE$  intersect at  $R$ . The perimeter of  $TIGE$  is 68, and  $TG = 16$ .



What is the length of diagonal  $\overline{IE}$ ?

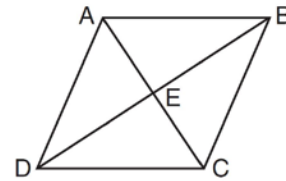
- 1) 15 2) 30 3) 34 4) 52
- 9 In rhombus  $ABCD$ , with diagonals  $\overline{AC}$  and  $\overline{DB}$ ,  $AD = 10$ .



If the length of diagonal  $\overline{AC}$  is 12, what is the length of  $\overline{DB}$ ?

- 1) 8 2) 16 3)  $\sqrt{44}$  4)  $\sqrt{136}$

- 10 In the diagram below of rhombus  $ABCD$ , the diagonals  $\overline{AC}$  and  $\overline{BD}$  intersect at  $E$ .



If  $AC = 18$  and  $BD = 24$ , what is the length of one side of rhombus  $ABCD$ ?

- 1) 15 2) 18 3) 24 4) 30
- 11 In rhombus  $ABCD$ , the diagonals  $\overline{AC}$  and  $\overline{BD}$  intersect at  $E$ . If  $AE = 5$  and  $BE = 12$ , what is the length of  $\overline{AB}$ ?
- 1) 7 2) 10 3) 13 4) 17
- 12 What is the perimeter of a rhombus whose diagonals are 16 and 30?
- 1) 92 2) 68 3) 60 4) 17
- 13 In rhombus  $VENU$ , diagonals  $\overline{VN}$  and  $\overline{EU}$  intersect at  $S$ . If  $VN = 12$  and  $EU = 16$ , what is the perimeter of the rhombus?
- 1) 80 2) 40 3) 20 4) 10
- 14 Which set of statements would describe a parallelogram that can always be classified as a rhombus?
- I. Diagonals are perpendicular bisectors of each other.
  - II. Diagonals bisect the angles from which they are drawn.
  - III. Diagonals form four congruent isosceles right triangles.
- 1) I and II 2) I and III 3) II and III 4) I, II, and III
- 15 A set of five quadrilaterals consists of a square, a rhombus, a rectangle, an isosceles trapezoid, and a parallelogram. Lu selects one of these figures at random. What is the probability that both pairs of the figure's opposite sides are parallel?

- 1) 1 2)  $\frac{4}{5}$  3)  $\frac{3}{4}$  4)  $\frac{2}{5}$

## G.CO.C.11: Special Quadrilaterals 1a

### Answer Section

1 ANS: 2

$$s^2 + s^2 = (3\sqrt{2})^2$$

$$2s^2 = 18$$

$$s^2 = 9$$

$$s = 3$$

REF: 011420ge

2 ANS: 3

$$16^2 + 30^2 = c^2$$

$1156 = c^2$ . 16, 30, 34 is a multiple of the 8, 15, 17 triangle.

$$34 = c$$

REF: 010615a

3 ANS: 4

$$2x - 8 = x + 2. \quad AE = 10 + 2 = 12. \quad AC = 2(AE) = 2(12) = 24$$

$$x = 10$$

REF: 011327ge

4 ANS: 3

$$6x + 4 = 2(7x - 6) \quad US = 6(2) + 4 = 16$$

$$6x + 4 = 14x - 12$$

$$16 = 8x$$

$$x = 2$$

REF: 011603ge

5 ANS: 4

Because  $ABCD$  is a rectangle,  $\overline{AB}$  and  $\overline{CD}$  are parallel and  $\overline{AC}$  is a transversal.  $\angle BAC$  and  $\angle ACD$  are equal alternate interior angles.  $3x + 4 = x + 28$ .  $m\angle BAC = 3(12) + 4 = 40$ . Since  $\angle BAC$  and  $\angle CAD$  are complementary,  $m\angle CAD = 50$ .

REF: 089909a

6 ANS: 1

REF: 011112ge

7 ANS: 2

The diagonals of a rhombus are perpendicular.  $180 - (90 + 12) = 78$

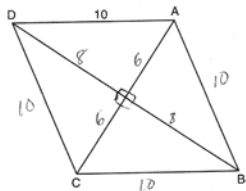
REF: 011204ge

8 ANS: 2

$$ER = \sqrt{17^2 - 8^2} = 15$$

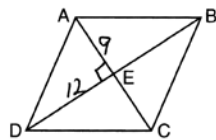
REF: 061917geo

9 ANS: 2



REF: 061414ge

10 ANS: 1



$$\sqrt{9^2 + 12^2} = 15$$

REF: 011505ge

11 ANS: 3

$$\sqrt{5^2 + 12^2} = 13$$

REF: 061116ge

12 ANS: 2

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

REF: 061326ge

13 ANS: 2

$$\sqrt{8^2 + 6^2} = 10 \text{ for one side}$$

REF: 011907geo

14 ANS: 4

REF: 061711geo

15 ANS: 2

In an isosceles trapezoid, only one pair of opposite sides is parallel.

REF: 010721a