G.CO.C.11: Special Quadrilaterals 2

1 Which statement about quadrilaterals is true?
1) All quadrilaterals have four right angles.
2) All quadrilaterals have equal sides. 3) All quadrilaterals have four sides. 4) All quadrilaterals are parallelograms.

2 In quadrilateral $QRST$, diagonals $\overline{QS}$ and $\overline{RT}$ intersect at M. Which statement would always prove quadrilateral $QRST$ is a parallelogram?
1) $\angle TQR$ and $\angle QRS$ are supplementary.
2) $\overline{QM} \cong \overline{SM}$ and $\overline{QT} \cong \overline{RS}$ 3) $\overline{QR} \cong \overline{TS}$ and $\overline{QT} \cong \overline{RS}$ 4) $\overline{QR} \cong \overline{TS}$ and $\overline{QT} \parallel \overline{RS}$

3 A parallelogram must be a rectangle when its
1) diagonals are perpendicular 2) diagonals are congruent 3) opposite sides are parallel
4) opposite sides are congruent

4 A parallelogram is always a rectangle if
1) the diagonals are congruent 2) the diagonals bisect each other 3) the diagonals intersect at right angles 4) the opposite angles are congruent

5 In parallelogram $ABCD$, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at E. Which statement proves $ABCD$ is a rectangle?
1) $\overline{AC} \cong \overline{BD}$ 2) $\overline{AB} \perp \overline{BD}$ 3) $\overline{AC} \perp \overline{BD}$
4) $\overline{AC}$ bisects $\angle BCD$

6 A parallelogram must be a rhombus if its diagonals
1) are congruent 2) bisect each other 3) do not bisect its angles 4) are perpendicular to each other

7 In parallelogram $ABCD$, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at E. Which statement does *not* prove parallelogram $ABCD$ is a rhombus?
1) $\overline{AC} \cong \overline{DB}$ 2) $\overline{AB} \cong \overline{BC}$ 3) $\overline{AC} \perp \overline{DB}$
4) $\overline{AC}$ bisects $\angle DCB$

8 If $ABCD$ is a parallelogram, which statement would prove that $ABCD$ is a rhombus?
1) $\angle ABC \cong \angle CDA$ 2) $\overline{AC} \cong \overline{BD}$
3) $\overline{AC} \perp \overline{BD}$ 4) $\overline{AB} \perp \overline{CD}$

9 Which information is *not* sufficient to prove that a parallelogram is a square?
1) The diagonals are both congruent and perpendicular. 2) The diagonals are congruent and one pair of adjacent sides are congruent.
3) The diagonals are perpendicular and one pair of adjacent sides are congruent. 4) The diagonals are perpendicular and one pair of adjacent sides are perpendicular.

10 A quadrilateral whose diagonals bisect each other and are perpendicular is a
1) rhombus 2) rectangle 3) trapezoid
4) parallelogram

11 Which quadrilateral has diagonals that always bisect its angles and also bisect each other?
1) rhombus 2) rectangle 3) parallelogram
4) isosceles trapezoid

12 The diagonals of a quadrilateral are congruent but do not bisect each other. This quadrilateral is
1) an isosceles trapezoid 2) a parallelogram
3) a rectangle 4) a rhombus

13 Which quadrilateral does *not* always have congruent diagonals?
1) isosceles trapezoid 2) rectangle
3) rhombus 4) square

14 In quadrilateral $ABCD$, the diagonals bisect its angles. If the diagonals are *not* congruent, quadrilateral $ABCD$ must be a
1) square 2) rectangle 3) rhombus
4) trapezoid

15 In quadrilateral $ABCD$, each diagonal bisects opposite angles. If $m\angle DAB = 70$, then $ABCD$ must be a
1) rectangle 2) trapezoid 3) rhombus
4) square

16 Which quadrilateral has diagonals that are always perpendicular bisectors of each other?
1) square 2) rectangle 3) trapezoid
4) parallelogram

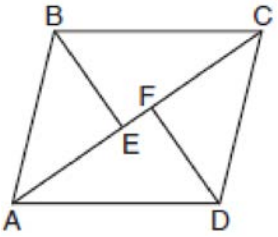
17 Which quadrilateral must have diagonals that are congruent and perpendicular?
1) rhombus 2) square 3) trapezoid
4) parallelogram

18 Given three distinct quadrilaterals, a square, a rectangle, and a rhombus, which quadrilaterals must have perpendicular diagonals?
1) the rhombus, only 2) the rectangle and the square 3) the rhombus and the square 4) the rectangle, the rhombus, and the square

19 In a certain quadrilateral, two opposite sides are parallel, and the other two opposite sides are not congruent. This quadrilateral could be a
1) rhombus 2) parallelogram 3) square
4) trapezoid

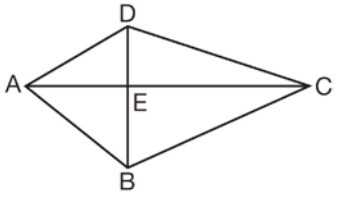
20 Which statement is *false*?
1) All parallelograms are quadrilaterals. 2) All rectangles are parallelograms. 3) All squares are rhombuses. 4) All rectangles are squares.

21 In the diagram below, if $\triangle ABE \cong \triangle CDF$ and $\overline{AEFC}$ is drawn, then it could be proven that quadrilateral $ABCD$ is a



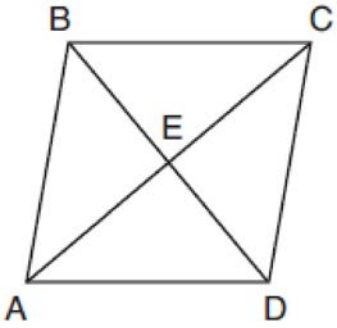
1) square 2) rhombus 3) rectangle
4) parallelogram

22 In the diagram below of quadrilateral $ABCD$, diagonals $\overline{AEC}$ and $\overline{BED}$ are perpendicular at E.



Which statement is always true based on the given information?
1) $\overline{DE} \cong \overline{EB}$ 2) $\overline{AD} \cong \overline{AB}$ 3) $\angle DAC \cong \angle BAC$
4) $\angle AED \cong \angle CED$

23 The diagram below shows parallelogram $ABCD$ with diagonals $\overline{AC}$ and $\overline{BD}$ intersecting at E.



What additional information is sufficient to prove that parallelogram $ABCD$ is also a rhombus?
1) $\overline{BD}$ bisects $\overline{AC}$. 2) $\overline{AB}$ is parallel to $\overline{CD}$.
3) $\overline{AC}$ is congruent to $\overline{BD}$. 4) $\overline{AC}$ is perpendicular to $\overline{BD}$.

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Answer Section

1 ANS: 3 REF: 010404a
2 ANS: 3 REF: 081913geo
3 ANS: 2 REF: 081501geo
4 ANS: 1 REF: 011716geo
5 ANS: 1 REF: 011716geo
6 ANS: 4 REF: 011819geo
7 ANS: 1
1) opposite sides; 2) adjacent sides; 3) perpendicular diagonals; 4) diagonal bisects angle

REF: 061609geo
8 ANS: 3
In (1) and (2), *ABCD* could be a rectangle with non-congruent sides. (4) is not possible

REF: 081714geo
9 ANS: 3 REF: 061924geo
10 ANS: 1 REF: 080918ge
11 ANS: 1 REF: 061125ge
12 ANS: 1 REF: 081121ge
13 ANS: 3 REF: 011425ge
14 ANS: 3 REF: 081419ge
15 ANS: 3

Diagonals of rectangles and trapezoids do not bisect opposite angles. m$\angle DAB = 90$ if *ABCD* is a square.

REF: 061511ge
16 ANS: 1 REF: 081517ge
17 ANS: 2 REF: 060526a
18 ANS: 3 REF: 081128ge
19 ANS: 4 REF: 080517a
20 ANS: 4
Not all rectangles are squares.

REF: 010919a
21 ANS: 4 REF: 011705geo
22 ANS: 4 REF: 081417ge
23 ANS: 4 REF: 061813geo