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 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

3 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

4 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

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

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

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

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

9 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

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

11 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

12 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

13 Which quadrilateral has diagonals that are always
    perpendicular bisectors of each other?
    1) square
    2) rectangle
    3) trapezoid
    4) parallelogram
14 Which quadrilateral must have diagonals that are congruent and perpendicular?
1) rhombus
2) square
3) trapezoid
4) parallelogram

15 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

16 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

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

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

19 In the diagram below of quadrilateral $ABCD$, diagonals $AEC$ and $BED$ are perpendicular at $E$.

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

20 The diagram below shows parallelogram $ABCD$ with diagonals $AC$ and $BD$ intersecting at $E$.

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

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1) opposite sides; 2) adjacent sides; 3) perpendicular diagonals; 4) diagonal bisects angle

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In (1) and (2), $ABCD$ could be a rectangle with non-congruent sides. (4) is not possible

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