**Ch 2 - 2D Geometry**

**True/False**

*Indicate whether the sentence or statement is true or false.*

*If false, write the corrected statement in the space provided.*

\_\_\_\_ 1. A right triangle can be similar to an obtuse triangle.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 2. A rhombus CANNOT be a parallelogram.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 3. Two squares that have the same perimeter must be congruent.

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\_\_\_\_ 4. These two shapes are similar but not congruent.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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\_\_\_\_ 5. Two figures that are similar are congruent.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Multiple Choice**

*Identify the letter of the choice that best completes the statement or answers the question.*

\_\_\_\_ 6. Classify the following triangle by the measurement of the angles.



|  |  |  |  |
| --- | --- | --- | --- |
| a. | acute triangle | c. | obtuse triangle |
| b. | right triangle | d. | isosceles |

\_\_\_\_ 7. Classify the following triangle in two ways.

****

|  |  |  |  |
| --- | --- | --- | --- |
| a. | right, scalene triangle | c. | acute, isosceles triangle |
| b. | right, isosceles triangle | d. | obtuse, scalene triangle |

\_\_\_\_ 8. I have four equal sides but no right angles. What quadrilateral am I?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | rhombus | c. | kite |
| b. | square | d. | rectangle |

\_\_\_\_ 9. I have two pairs of opposite sides that are parallel. I have no right angles. All of my sides are of equal length. What type of quadrilateral am I?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | kite | c. | parallelogram |
| b. | rhombus | d. | square |

\_\_\_\_ 10. Which of the following shapes are congruent?

****

|  |  |  |  |
| --- | --- | --- | --- |
| a. | A and B | c. | B and C |
| b. | C and D | d. | A and D |

**Completion**

*Complete each sentence or statement.*

 11. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angle measures more than 90º but less than 180º.

 12. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angle measures less than 90º.

 13. Stella and Christina each constructs a triangle that measures 3.5 cm, 5.0 cm, and 5.5 cm. These two triangles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ triangles.

**Matching**

*Match the correct term to each of the following descriptions.*

|  |  |  |  |
| --- | --- | --- | --- |
| a. | ray | e. | vertex |
| b. | flip | f. | protractor |
| c. | slide | g. | line segment |
| d. | turn | h. | transformations |

\_\_\_\_ 14. another name for a rotation

\_\_\_\_ 15. Another name for a reflection

\_\_\_\_ 16. Another name for a translation

\_\_\_\_ 17. the name for one arm of an angle

\_\_\_\_ 18. an instrument for measuring angles

\_\_\_\_ 19. the name for the line joining two points

\_\_\_\_ 20. a point where two arms of an angle meet

\_\_\_\_ 21. a collective term for reflections, rotations, and translations

*Match the correct term to each of the following descriptions.*

|  |  |  |  |
| --- | --- | --- | --- |
| a. | acute | e. | right |
| b. | equilateral | f. | scalene |
| c. | isosceles | g. | triangle |
| d. | obtuse | h. | vertex |

\_\_\_\_ 22. a close, three-sided shape

\_\_\_\_ 23. a point where two sides of a figure meet

\_\_\_\_ 24. a triangle with all sides equal

\_\_\_\_ 25. a triangle with no equal sides

\_\_\_\_ 26. a triangle containing a 90º angle

\_\_\_\_ 27. a triangle with all three angles less than 90º

\_\_\_\_ 28. a triangle with an angle that is greater than 90º

**Short Answer**

*Write your answer in the space provided.*

 29. Write two different ways that you can classify a triangle.

 30. Use a protractor and ruler to draw each triangle. Then, classify each triangle in two ways.

a) one angle of 60º between two sides measuring 3.5 cm and 4.0 cm

b) one side measuring 8 cm between angles of 90º and 45º

c) three angles measuring 60º

 31. Use a ruler and a protractor to draw each triangle. Then, classify the triangle in two ways.

a) In DEF, D is 55º, EF = 6 cm, and DE = 7 cm.

b) In GHI, H is a right angle, GH = 4 cm, and HI = 4 cm.

c) In KLM, L, M, and K are 60º.

 32. Draw an isosceles trapezoid. Explain why this is an appropriate name.

 33. List the six types of quadrilaterals, and sort them into two groups. Explain each grouping.

 34. What are the properties of geometric figures that you can examine to classify quadrilaterals?

 35. Draw and classify a quadrilateral that matches each of the following descriptions.

a) MN is parallel to OP.

MOP is a right angle.

One angle is obtuse.

b) Opposite sides are parallel.

All sides are of equal length.

All angles are right angles.

c) Opposite sides are parallel.

All sides are of equal length.

Two opposite angles are obtuse.

 36. Michael has a rectangular swimming pool that measures 4 m by 8 m. Maria has a pool that measures 3.8 m by 7.6 m. Are the two swimming pools congruent? Give reasons for your answer.

 37. Two triangles each has an angle that measures 75º. Are the triangles congruent? Explain your answer.

 38. Draw two similar and two congruent figures. Explain the differences between similar and congruent.

 39. Which triangles are congruent? Which triangles are similar? Explain why.

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 40. List and compare the corresponding angles and sides of KLM and XYZ. Are these triangles similar? Give reasons for your answer.

****

**Problem**

*Write your answer in the space provided.*

 41. Draw and identify the different types of triangles that can be formed by connecting three dots on a 5 by 5 grid of dots.

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 42. Identify the geometric figures in each of the following flag designs. Are any of the figures congruent or similar? Explain.

****

**Ch 2 - 2D Geometry**

**Answer Section**

**TRUE/FALSE**

 1. ANS: F

In a right triangle, one angle is 90º and the other two angles are less than 90º. It cannot be similar to an obtuse triangle which has an angle that measures more than 90º.

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 2.1

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Right, Obtuse

 2. ANS: F

A rhombus is a parallelogram. It has two pairs of opposite parallel sides and all four sides are equal in length.

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 2.2

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Parallelogram, Rhombus

 3. ANS: T DIF: Level 3 REF: Knowledge/Understanding

OBJ: Section 2.3 STO: GSS-7m49 TOP: Geometry and Spatial Sense

KEY: Congruent

 4. ANS: F

These two shapes have the same shape and size, so they are congruent.

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 2.4

STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Similar, Congruent

 5. ANS: F

Similar figures are not always the same size, so they may not be congruent.

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 2.4

STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Similar, Congruent

**MULTIPLE CHOICE**

 6. ANS: **A** DIF: Level 2 REF: Application OBJ: Section 2.1

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Acute

 7. ANS: A DIF: Level 3 REF: Application OBJ: Section 2.1

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Right, Scalene

 8. ANS: A DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 2.2 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Quadrilateral

 9. ANS: B DIF: Level 3 REF: Application OBJ: Section 2.2

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Rhombus

 10. ANS: D DIF: Level 2 REF: Application OBJ: Section 2.3

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Congruent

**COMPLETION**

 11. ANS: obtuse

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 2.1

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Obtuse

 12. ANS: acute

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 2.1

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Acute

 13. ANS:

congruent

scalene

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 2.3

STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Congruent, Scalene

**MATCHING**

 14. ANS: D DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Rotation

 15. ANS: B DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Rotation

 16. ANS: C DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Translation

 17. ANS: A DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Ray

 18. ANS: F DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Protractor

 19. ANS: G DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Line Segment

 20. ANS: E DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Vertex

 21. ANS: H DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Transformation

 22. ANS: G DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Triangle

 23. ANS: H DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Vertex

 24. ANS: B DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Equilateral

 25. ANS: F DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Scalene

 26. ANS: E DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Right

 27. ANS: A DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Acute

 28. ANS: D DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 2.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Obtuse

**SHORT ANSWER**

 29. ANS:

You can classify a triangle by its angle measures.

You can classify a triangle by its side lengths.

DIF: Level 3 REF: Communication OBJ: Section 2.1

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Triangle

 30. ANS:

a) acute scalene triangle

b) right isosceles triangle

c) acute equilateral triangle

DIF: Level 3 REF: Application OBJ: Section 2.1 STO: GSS-7m47

TOP: Geometry and Spatial Sense KEY: Triangle

 31. ANS:

a) acute scalene triangle

b) right isosceles triangle

c) acute equilateral triangle

DIF: Level 3 REF: Application OBJ: Section 2.1 STO: GSS-7m47

TOP: Geometry and Spatial Sense KEY: Triangle

 32. ANS:

Drawings will vary.

This quadrilateral has only one pair of opposite sides that are parallel, and the other pair of opposite sides are of equal length.

DIF: Level 3 REF: Communication OBJ: Section 2.2

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Quadrilateral

 33. ANS:

The six types of quadrilaterals are rectangles, squares, parallelograms, rhombuses, kites, and trapezoids.

Group 1: rectangles, squares, parallelograms, rhombuses. These quadrilaterals have two pairs of opposite sides that are parallel.

Group 2: kites and trapezoids. These quadrilaterals do not have two pairs of opposite sides that are parallel.

DIF: Level 3 REF: Communication OBJ: Section 2.2

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Quadrilateral

 34. ANS:

You can examine the side lengths, the angle measures, and if the sides are parallel.

DIF: Level 3 REF: Communication OBJ: Section 2.2

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Quadrilateral

 35. ANS:

a) MNPO is a trapezoid.

b) The quadrilateral is a square.

c) The quadrilateral is a rhombus.

DIF: Level 3 REF: Application OBJ: Section 2.2 STO: GSS-7m47

TOP: Geometry and Spatial Sense KEY: Quadrilateral

 36. ANS:

Compare the corresponding sides:

For Michael’s pool, width = 4 m and length = 8 m

For Maria’s pool, width = 3.8 m and length = 7.6 m

The corresponding sides are not the same. The swimming pools are not congruent.

DIF: Level 3 REF: Communication OBJ: Section 2.3

STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Similar

 37. ANS:

The triangles may not be congruent. A triangle with one angle of 75º can be a right triangle, an isosceles triangle, or a scalene triangle.

DIF: Level 3 REF: Communication OBJ: Section 2.3

STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Congruent

 38. ANS:

Diagrams will vary.

Congruent figures have the same shape and size.

Similar figures have the same shape but not the same size.

DIF: Level 3 REF: Communication OBJ: Section 2.4

STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Congruent, Similar

 39. ANS:

ABC and GHI are congruent because:

AB = GH, BC = HI, AC = GI

DEF and PQR are congruent because:

DE = PQ, EF = QR, DF = PR

JKL and LMN are similar because:



DIF: Level 3 REF: Communication OBJ: Section 2.4

STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Congruent, Similar

 40. ANS:

Compare the corresponding angles:

 = X

L = Y

 = 

Compare the corresponding sides:



Each side of KLM is half the corresponding side of XYZ.

KLM and XYZ are similar because they have the same shape but not the same size.

DIF: Level 3 REF: Communication OBJ: Section 2.4

STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Similar

**PROBLEM**

 41. ANS:

• acute isosceles

• acute scalene

• obtuse isosceles

• obtuse scalene

• right isosceles

• right scalene

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 2.1

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Triangle

 42. ANS:

Design A:

• The flag has two right scalene triangles, three obtuse isosceles triangles, and two trapezoids.

• The two right scalene triangles are congruent.

• The three obtuse isosceles triangles are similar.

• The two trapezoids are similar.

Design B:

• The flag has one equilateral triangle, one obtuse isosceles triangle, and two trapezoids. b)

• The two trapezoids are congruent.

Design C:

• The flag has one equilateral triangle, and two trapezoids.

• The two trapezoids are congruent.

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 2.4

STO: GSS-7m49 TOP: Geometry and Spatial Sense KEY: Congruent, Similar