**Ch 8 - 3D Geometry & Measurement Practice Test**

**True/False**

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

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

\_\_\_\_ 1. “Congruent” means having similar shape and size.

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\_\_\_\_ 2. A pentagon has six sides.

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\_\_\_\_ 3. A common name for a rectangular prism is a box.

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\_\_\_\_ 4. Three-dimensional figures can be classified according to their properties.

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\_\_\_\_ 5. A rectangle is not a parallelogram.

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\_\_\_\_ 6. A pyramid can have a circular base.

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\_\_\_\_ 7. The front, top, and side views of objects are three-dimensional drawings.

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\_\_\_\_ 8. The net of a regular hexagonal pyramid has six congruent triangles.

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\_\_\_\_ 9. The surface area of this juice box is 246 cm2.

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\_\_\_\_ 10. The volume of a rectangular prism that measures 5.5 cm in length, 4.0 cm in width, and 3.6 cm in height is 77.2 cm3.

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**Multiple Choice**

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

\_\_\_\_ 11. Name the following three-dimensional figure.

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|  |  |  |  |
| --- | --- | --- | --- |
| a. | triangular prism | c. | triangular pyramid |
| b. | rectangular pyramid | d. | square-based pyramid |

\_\_\_\_ 12. Your desk consists of the following shape(s).

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cylinder | c. | cube |
| b. | rectangular prism | d. | a. and b. |

\_\_\_\_ 13. A polyhedron has two pentagonal faces and five rectangles. What type of polyhedron fits this description?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | triangular prism | c. | pentagonal pyramid |
| b. | pentagonal prism | d. | hexagonal prism |

\_\_\_\_ 14. I have only two congruent faces. What three-dimensional figure am I?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cylinder | c. | cube |
| b. | triangular prism | d. | rectangular prism |

\_\_\_\_ 15. What geometric figure is the side view of a pop can?

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|  |  |  |  |
| --- | --- | --- | --- |
| a. | circle | c. | oval |
| b. | square | d. | rectangle |

\_\_\_\_ 16. What type of figure is the side view of a basketball net?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | circle | c. | square |
| b. | rectangle | d. | triangle |

\_\_\_\_ 17. What three-dimensional figure has the following net?

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|  |  |  |  |
| --- | --- | --- | --- |
| a. | pentagonal prism | c. | hexagonal pyramid |
| b. | rectangular pyramid | d. | pentagonal pyramid |

\_\_\_\_ 18. What geometric figure has a net with a hexagonal base and six congruent triangles?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | hexagonal prism | c. | heptagonal prism |
| b. | hexagonal pyramid | d. | heptagonal pyramid |

\_\_\_\_ 19. Find the surface area of the following rectangular prism.



|  |  |  |  |
| --- | --- | --- | --- |
| a. | 177 cm2 | c. | 165 cm2 |
| b. | 160 cm2 | d. | 150 cm2 |

\_\_\_\_ 20. What is the surface area of a cube with each side measuring 7 cm?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 294 cm2 | c. | 343 cm2 |
| b. | 196 cm2 | d. | 84 cm2 |

\_\_\_\_ 21. What is the surface area of the following rectangular prism?

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|  |  |  |  |
| --- | --- | --- | --- |
| a. | 11.8 cm2 | c. | 22.38 cm2 |
| b. | 18.3 cm2 | d. | 25.38 cm2 |

\_\_\_\_ 22. What is the volume of a pool that measures 8 m by 10 m by 5 m?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 90 m3 | c. | 340 m3 |
| b. | 120 m3 | d. | 400 m3 |

\_\_\_\_ 23. Which prism has the greater volume, a rectangular prism with dimensions 16 cm by 10 cm by 12 cm or a cube with dimensions 14 cm by 14 cm by 14 cm?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cube | c. | same volume |
| b. | rectangular prism | d. | cannot be calculated |

\_\_\_\_ 24. A rectangular prism has a volume of 480 m3. The length measures 12 m and the width measures 5 m. What is the dimension of the height?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 6 m | c. | 8 m |
| b. | 7 m | d. | 9 m |

**Completion**

*Complete each sentence or statement.*

 25. A polygon whose sides are all equal is referred to as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 26. Mathematicians describe three-dimensional objects in terms of their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 27. A polyhedron whose top and base are parallel and congruent polygons and has other faces that are rectangles is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 28. The number of square units needed to cover an object is the object’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 29. The amount of space occupied by an object is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 30. The formula for the volume of a rectangular prism is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Short Answer**

*Write your answer in the space provided.*

 31. What three-dimensional shape is this tent?

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a) Name all edges that are of equal length.

b) Name the two pairs of congruent faces.

 32. Describe the similarities and differences between prisms and pyramids.

 33. Containers for food come in various sizes and shapes. Identify and sketch five types of containers. State what each type could be used for.

 34. When the following net is folded, which shapes will be facing each other on opposite sides?

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 35. The volume of a rectangular prism is 56 cm3. List three possibilities of the dimensions for this object.

 36. Calculate the volume of each of the following shapes.

a) a rectangular prism that measures 2.5 cm by 3.0 cm by 4.8 cm

b) a cube that measures 13 cm on each edge

**Problem**

*Write your answer in the space provided.*

 37. Mark has a cooler that is 32 cm long and 21 cm wide. The cooler has a volume of 9072 cm3. Make a sketch of the cooler and draw its net. What is the depth of this cooler?

 38. Stella is planning to go on a trip. Her suitcase measures 85 cm by 40 cm by 30 cm. What is the volume of her suitcase? She has a dresser drawer, measuring 60 cm by 50 cm by 35 cm, filled with clothes. Can Stella take all of her clothes with her? Explain.

**Ch 8 - 3D Geometry & Measurement Practice Test**

**Answer Section**

**TRUE/FALSE**

 1. ANS: F

“Congruent” means having the same shape and size.

DIF: Level 1 REF: Knowledge/Understanding OBJ: Section 8.1

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

 2. ANS: F

A hexagon has six sides.

DIF: Level 1 REF: Knowledge/Understanding OBJ: Section 8.1

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

 3. ANS: T DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 8.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Polyhedron

 4. ANS: T DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 8.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Three-Dimensional Figure

 5. ANS: F

A rectangle is a parallelogram. The opposite sides of a rectangle are parallel, as are the opposite sides of a parallelogram.

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 8.1

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

 6. ANS: F

A pyramid cannot have a circular base. A pyramid is a polyhedron that has the same number of triangular faces as the number of sides on the base.

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 8.1

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

 7. ANS: F

The front, top, and side views of objects are two-dimensional drawings.

DIF: Level 1 REF: Knowledge/Understanding OBJ: Section 8.2

STO: GSS-7m52 TOP: Geometry and Spatial Sense KEY: View

 8. ANS: T DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 8.3 STO: GSS-7m48 TOP: Geometry and Spatial Sense

KEY: Net, Congruent

 9. ANS: F

The surface area of the juice box is 238 cm2.

DIF: Level 3 REF: Application OBJ: Section 8.4 STO: Mea-7m30

TOP: Measurement KEY: Surface Area

 10. ANS: F

The volume of a rectangular prism that measures 5.5 cm in length, 4.0 cm in width, and 3.6 cm in height is 79.2 cm3.

DIF: Level 3 REF: Application OBJ: Section 8.5 STO: Mea-7m31

TOP: Measurement KEY: Volume

**MULTIPLE CHOICE**

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

OBJ: Section 8.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Polyhedron

 12. ANS: D

Most desks are rectangular in shape and their legs are in the form of cylinders.

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 8.1

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

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

OBJ: Section 8.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Polyhedron, Prism

 14. ANS: A DIF: Level 3 REF: Knowledge/Understanding

OBJ: Section 8.1 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: Three-Dimensional Figure

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

OBJ: Section 8.2 STO: GSS-7m48 TOP: Geometry and Spatial Sense

KEY: View

 16. ANS: B DIF: Level 3 REF: Knowledge/Understanding

OBJ: Section 8.2 STO: GSS-7m47 TOP: Geometry and Spatial Sense

KEY: View

 17. ANS: D DIF: Level 3 REF: Knowledge/Understanding

OBJ: Section 8.3 STO: GSS-7m48 TOP: Geometry and Spatial Sense

KEY: Net

 18. ANS: B DIF: Level 3 REF: Knowledge/Understanding

OBJ: Section 8.3 STO: GSS-7m48 TOP: Geometry and Spatial Sense

KEY: Net

 19. ANS: B DIF: Level 3 REF: Application OBJ: Section 8.4

STO: Mea-7m30 TOP: Measurement KEY: Surface Area

 20. ANS: A DIF: Level 3 REF: Application OBJ: Section 8.4

STO: Mea-7m30 TOP: Geometry and Spatial Sense, Measurement

KEY: Surface Area

 21. ANS: C DIF: Level 3 REF: Application OBJ: Section 8.4

STO: Mea-7m30 TOP: Measurement KEY: Surface Area

 22. ANS: D DIF: Level 2 REF: Application OBJ: Section 8.5

STO: Mea-7m31 TOP: Measurement KEY: Volume

 23. ANS: A

The volume of the rectangular prism is 1920 cm3 and the volume of the cube is 2744 cm3.

DIF: Level 3 REF: Application OBJ: Section 8.5 STO: Mea-7m31

TOP: Measurement KEY: Volume

 24. ANS: C DIF: Level 3 REF: Application OBJ: Section 8.5

STO: Mea-7m31 TOP: Measurement KEY: Volume

**COMPLETION**

 25. ANS: regular polygon

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 8.1

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

 26. ANS: faces, edges, vertices

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 8.1

STO: GSS-7m52 TOP: Geometry and Spatial Sense KEY: Polyhedron

 27. ANS: prism

DIF: Level 3 REF: Knowledge/Understanding OBJ: Section 8.1

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

 28. ANS: surface area

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 8.4

STO: Mea-7m28, Mea-7m30 TOP: Measurement

KEY: Surface Area

 29. ANS: volume

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 8.5

STO: Mea-7m28 TOP: Measurement KEY: Volume

 30. ANS: *V* = *l*  *w*  *h*

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 8.5

STO: Mea-7m31 TOP: Measurement KEY: Volume

**SHORT ANSWER**

 31. ANS:

The tent is a triangular prism.

a) equal edges:

RS = RT, MN = MP, TP = SN = RM, ST = NP

b) congruent faces:

RST = MNP, RMNS = RMPT

DIF: Level 3 REF: Application OBJ: Section 8.1 STO: GSS-7m47

TOP: Geometry and Spatial Sense KEY: Polyhedron

 32. ANS:

Similarities:

• Prisms and pyramids have faces that are polygons.

Differences:

• Prisms

- base and top are parallel polygons that are congruent

- all other faces are rectangles

• Pyramids

- base is a polygon

- other faces are triangles that meet at one point

DIF: Level 3 REF: Communication OBJ: Section 8.1

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Prism, Pyramid

 33. ANS:

Responses may vary. Possible answers include:

• sandwich container

• cereal box

• spaghetti container

• juice box

• cookie jar

• snack box

• candy container

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 8.1

STO: GSS-7m47 TOP: Geometry and Spatial Sense KEY: Polyhedron, Prism

 34. ANS:

• triangle and rectangle

• square and pentagon

• circle and hexagon

DIF: Level 2 REF: Thinking/Inquiry/Problem Solving OBJ: Section 8.3

STO: GSS-7m48 TOP: Geometry and Spatial Sense KEY: Net

 35. ANS:

Responses will vary. Possible answers include:

1 cm  2 cm  28 cm

1 cm  4 cm  14 cm

1 cm  7 cm  8 cm

2 cm  2 cm  14 cm

2 cm  4 cm  7 cm

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 8.4

STO: GSS-7m48 TOP: Measurement KEY: Volume

 36. ANS:

a) 36 cm3

b) 2197 cm3

DIF: Level 2 REF: Application OBJ: Section 8.5 STO: Mea-7m31

TOP: Measurement KEY: Volume

**PROBLEM**

 37. ANS:

The depth of the cooler is 13.5 cm.



DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 8.5

STO: Mea-7m31 TOP: Measurement KEY: Volume

 38. ANS:

The volume of the suitcase is 102 000 cm3. The volume of the dresser is 105 000 cm3. Stella cannot take all her clothes with her unless she squeezes the clothes into the smaller size suitcase.

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 8.5

STO: Mea-7m31 TOP: Measurement KEY: Volume