**M7+ - Unit 8 - 2D Figures Study Guide**

**Multiple Choice**

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

1. The Student Council is making six right triangular pennants to promote school spirit. Each right triangle is 9 inches high and 2 feet long. In square feet, what is the total area of the six pennants?

|  |  |
| --- | --- |
| a. | 4.5 ft2 |
| b. | 9.0 ft2 |
| c. | 54.0 ft2 |
| d. | 108.0 ft2 |

2. Find the surface area of the cylinder. Use a calculator. Round to the nearest tenth.



|  |  |
| --- | --- |
| a. | 480.7 m2 |
| b. | 1,017.9 m2 |
| c. | 735.1 m2 |
| d. | 622 m2 |

3. The Pie Factory sells an apple pie with a diameter of 16 inches for $10.99. What is the approximate cost per square inch of surface area of the pie? Use 3.14 for **.

|  |  |
| --- | --- |
| a. | $.05 |
| b. | $.67 |
| c. | $.83 |
| d. | $.01 |

4. Find the area of the figure to the nearest square unit.



|  |  |
| --- | --- |
| a. | 74 cm2 |
| b. | 125 cm2 |
| c. | 49 cm2 |
| d. | 37 cm2 |

5. Find the area of the circle to the nearest tenth. Use 3.14 for **.



|  |  |
| --- | --- |
| a. | 986 ft2 |
| b. | 314 ft2 |
| c. | 62.8 ft2 |
| d. | 1256 ft2 |

6. Find the area of the figure.



|  |  |
| --- | --- |
| a. | 24 m2 |
| b. | 6 m2 |
| c. | 108 m2 |
| d. | 18 m2 |

7. A field is to be fertilized at a cost of $0.05 per square yard. The rectangular part of the field is 115 yards long and the diameter of each semicircle is 45 yards. Find the cost of fertilizing the field. Use 3.14 for **.



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | $338.23 | b. | $284.06 | c. | $576.68 | d. | $4,058.78 |

8. Determine the surface area of the prism formed by the following net.



|  |  |  |  |
| --- | --- | --- | --- |
| a. | 72.4 m2 | c. | 352.8 m2 |
| b. | 305.2 m2 | d. | 152.6 m2 |

9. The diagram shows a square of side 3 in. containing a circle of diameter 3 in. To the nearest hundredth, what is the area of the shaded part of the figure? Use 3.14 for **.



|  |  |
| --- | --- |
| a. | 4.82 in.2 |
| b. | 0.48 in.2 |
| c. | 1.93 in.2 |
| d. | 4.03 in.2 |

10. Find the area of the figure. Round your answer to the nearest tenth.

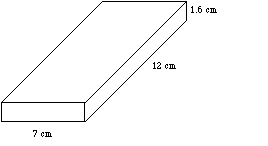


|  |  |
| --- | --- |
| a. | 1,228.2 ft2 |
| b. | 1,055.1 ft2 |
| c. | 346.2 ft2 |
| d. | 882 ft2 |

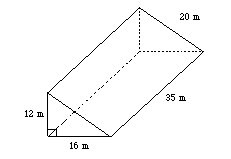
11. Ester is planning on making a circular garden. If the diameter of the garden is 21 meters, what is its circumference? Use  for **.

|  |  |
| --- | --- |
| a. | m |
| b. | m |
| c. | m |
| d. | m |

**Find the surface area of the prism.**

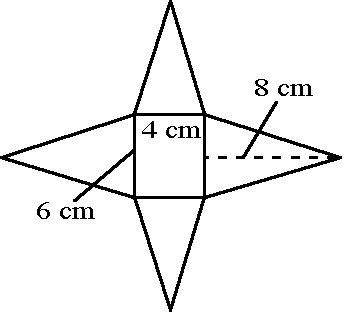
12. 

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | 114.4 cm2 | b. | 190.4 cm2 | c. | 206.4 cm2 | d. | 228.8 cm2 |

13. 

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | 1,872 m2 | b. | 6,720 m2 | c. | 1,662 m2 | d. | 3,360 m2 |

**Name the space figure you can form from the net.**

14. 

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

15. Determine to the nearest tenth the surface area of the cylinder formed by the following net. Use 3.14 for **.



|  |  |
| --- | --- |
| a. | 521.2 cm2 |
| b. | 442.7 cm2 |
| c. | 395.6 cm2 |
| d. | 339.1 cm2 |

16. For a history fair, a school is building a circular wooden stage that will stand 2 feet off the ground. Determine the area of the stage if the radius of the stage is 10 feet. Use 3.14 for **.

|  |  |
| --- | --- |
| a. | 1,256 ft2 |
| b. | 62.8 ft2 |
| c. | 314 ft2 |
| d. | 628 ft2 |

**Find the area of the circle in terms of pi.**

17. 

|  |  |
| --- | --- |
| a. | 9** in.2 |
| b. | 3**in.2 |
| c. | 1.5** in.2 |
| d. | 2.25** in.2 |

18. Isaac is planning on redoing his bathroom floor with tiles measuring 2 in. by 11 in.. The floor has an area of 240 in.2. What is the least number of tiles he will need?

|  |  |
| --- | --- |
| a. | 19 tiles |
| b. | 10 tiles |
| c. | 10.91 tiles |
| d. | 11 tiles |

19. ‘The diagram shows the dimensions of the front of a storage building. What is the area of the entire front of the building?



|  |  |
| --- | --- |
| a. | 30 ft2 |
| b. | 39 ft2 |
| c. | 48 ft2 |
| d. | 9 ft2 |

20. Find the surface area of the square pyramid.



|  |  |
| --- | --- |
| a. | 117 ft2 |
| b. | 225 ft2 |
| c. | 144 ft2 |
| d. | 153 ft2 |

**M7+ - Unit 8 - 2D Figures Study Guide**

**Answer Section**

**MULTIPLE CHOICE**

1. ANS: A PTS: 1 DIF: L2 REF: 10-2 Area: Triangles and Trapezoids

OBJ: 10-2.1 Finding Areas of Triangles

NAT: NAEP M1h | NAEP M2d | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 2.01 | 8NC 3.02 TOP: 10-2 Example 1

KEY: altitude of a triangle | area | area of a triangle | problem solving | word problem

MSC: NAEP M1h | NAEP M2d | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

2. ANS: C PTS: 1 DIF: L1 REF: 10-5 Surface Area: Prisms and Cylinders

OBJ: 10-5.2 Finding Surface Areas of Cylinders

NAT: NAEP M1j | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 3.02 TOP: 10-5 Example 3

KEY: cylinder | surface area of a cylinder | formula

MSC: NAEP M1j | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

3. ANS: A PTS: 1 DIF: L2 REF: 10-3 Area: Circles

OBJ: 10-3.1 Finding Areas of Circles

NAT: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 1.01 | 8NC 3.02

KEY: area | diameter | area of a circle | problem solving | word problem

MSC: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

4. ANS: C PTS: 1 DIF: L1 REF: 10-3 Area: Circles

OBJ: 10-3.2 Finding Areas of Irregular Figures

NAT: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 1.01 | 8NC 3.02 TOP: 10-3 Example 3

KEY: area | diameter | area of an irregular figure | area of a circle | area of a rectangle | problem solving

MSC: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

5. ANS: B

To find the area of a circle, multiply ** by the square of the circle’s radius. To obtain one radius in this problem, the student must divide the given diameter by 2.

|  |  |
| --- | --- |
|  | **Feedback** |
| **A** | Remember to apply the order of operations. |
| **B** | Correct! |
| **C** | This is the circumference of the circle. |
| **D** | Does the formula for area use the radius or the diameter? |

PTS: 1 REF: Page 438 OBJ: 8-6.1 Finding the Area of a Circle

NAT: 2.1.h | 5.4.e STA: 7.5.04 TOP: 8-6 Area of Circles

KEY: area | circle

6. ANS: A

To find the area of this figure, you must find the area of the box and then add that to the area of the triangle. To find the area of the triangle, you must notice that the height of the triangle is a sum of two given measurements.

|  |  |
| --- | --- |
|  | **Feedback** |
| **A** | Correct! |
| **B** | This is only the area of the triangle. |
| **C** | Should you multiply the area of each figure together? |
| **D** | This is only the area of the rectangle. |

PTS: 1 REF: Page 456 OBJ: 8-Ext.1 Finding the Area of an Irregular Figure

NAT: 2.1.h | 3.2.d STA: 7.1.03 | 7.5.04 TOP: 8-Ext Area of Irregular Figures

KEY: area | irregular figure

7. ANS: A PTS: 1 DIF: L1 REF: 10-3 Area: Circles

OBJ: 10-3.2 Finding Areas of Irregular Figures

NAT: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 1.01 | 8NC 3.02 TOP: 10-3 Example 3

KEY: word problem | area of an irregular figure | area | diameter | area of a circle | area of a rectangle | problem solving

MSC: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

8. ANS: B

The surface are of a prism can be found with the formula *S* = 2*lw + 2lh* + 2*wh*.

|  |  |
| --- | --- |
|  | **Feedback** |
| **A** | Check the formula for the surface area of a prism. |
| **B** | Correct! |
| **C** | Is this the surface area or the volume? |
| **D** | Did you remember the opposite side of each surface? |

PTS: 1 REF: Page 486 OBJ: 9-4.1 Finding the Surface Area of a Prism

NAT: 2.1.j | 5.4.e STA: 7.2.02 TOP: 9-4 Surface Area of Prisms, Cylinders, and Spheres

KEY: prism | surface area

9. ANS: B PTS: 1 DIF: L2 REF: 10-3 Area: Circles

OBJ: 10-3.2 Finding Areas of Irregular Figures

NAT: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 1.01 | 8NC 3.02 TOP: 10-3 Example 3

KEY: area | diameter | area of a circle | area of a rectangle | problem solving

MSC: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

10. ANS: B

To find the area of this figure, you must find the area of the rectangle and then add that to the area of the semicircle. To find the area of the circle, you must notice that the radius of the circle is one half of one of the measurements of the rectangle.

|  |  |
| --- | --- |
|  | **Feedback** |
| **A** | You used the area of the whole circle. How much of the circle is in the figure? |
| **B** | Correct! |
| **C** | This is just the area of the circle. |
| **D** | This is just the area of the rectangle. |

PTS: 1 REF: Page 457 OBJ: 8-Ext.1 Finding the Area of an Irregular Figure

NAT: 2.1.h | 3.2.d STA: 7.1.03 | 7.5.04 TOP: 8-Ext Area of Irregular Figures

KEY: area | irregular figure

11. ANS: C

To find the circumference of the circle, multiply the diameter by pi, which is approximated as .

|  |  |
| --- | --- |
|  | **Feedback** |
| **A** | This is the area of the garden. |
| **B** | Check the formula used for finding the circumference of a circle. |
| **C** | Correct! |
| **D** | Check the formula used for finding the circumference of a circle. |

PTS: 1 REF: Page 425

OBJ: 8-3.4 Application: Find Perimeters of Polygons or Circumferences of Circles

NAT: 2.1.h | 5.4.e STA: 7.5.04 TOP: 8-3 Perimeter and Circumference

KEY: circle | circumference | perimeter | polygon

12. ANS: D PTS: 1 DIF: L1 REF: 10-5 Surface Area: Prisms and Cylinders

OBJ: 10-5.1 Finding Surface Areas of Prisms

NAT: NAEP M1j | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 3.02 TOP: 10-5 Example 2

KEY: surface area of a prism | surface area | prism | formula

MSC: NAEP M1j | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

13. ANS: A PTS: 1 DIF: L1 REF: 10-5 Surface Area: Prisms and Cylinders

OBJ: 10-5.1 Finding Surface Areas of Prisms

NAT: NAEP M1j | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 3.02 TOP: 10-5 Example 2

KEY: surface area of a prism | surface area | prism | formula

MSC: NAEP M1j | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

14. ANS: B PTS: 1 DIF: L1 REF: 10-4 Space Figures

OBJ: 10-4.2 Identifying Space Figures From Nets

NAT: NAEP G1c | NAEP G1e | NAEP G1f | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.14 | TV.LV18.18

STA: 8NC 3.02 TOP: 10-4 Example 2 KEY: net | pyramid

MSC: NAEP G1c | NAEP G1e | NAEP G1f | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.14 | TV.LV18.18

15. ANS: A

The formula for the surface area of a cylinder is *S* = 2*r*2 + 2*rh*.

|  |  |
| --- | --- |
|  | **Feedback** |
| **A** | Correct! |
| **B** | Check the formula for the surface area of a cylinder. |
| **C** | Check the formula for the surface area of a cylinder. |
| **D** | Check the formula for the surface area of a cylinder. |

PTS: 1 REF: Page 487 OBJ: 9-4.2 Finding the Surface Area of a Cylinder

NAT: 2.1.j | 5.4.e STA: 7.2.02 TOP: 9-4 Surface Area of Prisms, Cylinders, and Spheres

KEY: cylinder | surface area

16. ANS: C

To find the area of the stage, multiply the value for ** by the square of the radius of the circular stage.

|  |  |
| --- | --- |
|  | **Feedback** |
| **A** | Does the formula for area use the radius or the diameter? |
| **B** | This is the circumference of the stage. |
| **C** | Correct! |
| **D** | The height of the stage has nothing to do with this problem. |

PTS: 1 REF: Page 439 OBJ: 8-6.2 Application: Find the Areas of Circles

NAT: 2.1.h | 5.4.e STA: 7.5.04 TOP: 8-6 Area of Circles

KEY: area | circle

17. ANS: D PTS: 1 DIF: L1 REF: 10-3 Area: Circles

OBJ: 10-3.1 Finding Areas of Circles

NAT: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 1.01 | 8NC 3.02 TOP: 10-3 Example 1

KEY: area | area of a circle | radius

MSC: NAEP M1h | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

18. ANS: D

To determine the number of tiles needed, find the area of each tile, and then divide the area of the floor by the area of each tile. If the answer is a decimal, the answer will need to be rounded up to account for the entire tile.

|  |  |
| --- | --- |
|  | **Feedback** |
| **A** | How should you determine the area of each tile? |
| **B** | Should you round down for the extra tile? |
| **C** | Should your answer include a decimal? |
| **D** | Correct! |

PTS: 1 REF: Page 431 OBJ: 8-4.3 Application: Find Areas of Parallelograms

NAT: 1.5.d | 2.1.h STA: 7.1.03 | 7.5.04 TOP: 8-4 Area of Parallelograms

KEY: area | parallelogram

19. ANS: B PTS: 1 DIF: L1 REF: 10-2 Area: Triangles and Trapezoids

OBJ: 10-2.1 Finding Areas of Triangles

NAT: NAEP M1h | NAEP M2d | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 2.01 | 8NC 3.02 TOP: 10-2 Example 2

KEY: altitude of a triangle | area | area of a rectangle | area of a triangle | problem solving | word problem

MSC: NAEP M1h | NAEP M2d | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

20. ANS: B PTS: 1 DIF: L1

REF: 10-6 Surface Area: Pyramids, Cones, and Spheres

OBJ: 10-6.1 Finding Surface Areas of Pyramids

NAT: NAEP M1j | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14

STA: 8NC 3.02 TOP: 10-6 Example 1

KEY: surface area of a pyramid | surface area | pyramid | formula

MSC: NAEP M1j | CAT5.LV18.55 | CAT5.LV18.56 | CTBS.LV18.55 | CTBS.LV18.56 | ITBS.LV14.G | ITBS.LV14.M | S9.Adv1.GM | S10.Adv1.GM | TV.LV18.13 | TV.LV18.14