Solutions to End of Chapter Questions

True/False

1. In Quadrant III, both x and y values are positive.
   True <u>False</u>

Feedback: In Quadrant III, both x and y values are negative.

2. The Cartesian coordinate system is the only way to represent locations in space.
   <u>True</u> False

Feedback: The Cartesian coordinate system is just one way to represent locations in space. There are other coordinate systems such as Spherical, Cylindrical, Polar, etc. that can be used to represent spatial locations.

3. In the Cartesian system, a point's location is specified on a plane using numerical values, x and y coordinates, corresponding to the horizontal x-axis and the vertical y-axis.
   <u>True</u> False

Feedback: In the Cartesian system, a point's location is specified on a plane using numerical values, x and y coordinates, corresponding to the horizontal x-axis and the vertical y-axis.

4. In the right-handed system, the middle finger showing the z-axis will be pointing towards you.
   <u>True</u> False

Feedback: In the right handed system, the middle finger showing the z-axis will be pointing towards you.

5. In the Cartesian coordinate system, a point is represented as a function of angle and distance.
   True <u>False</u>

   Feedback: In the polar coordinate system, a point is represented as a function of angle and distance.

6. In 3D graphics, a point cannot be rendered.
   <u>True</u> False

   Feedback: A point actually specifies only the position and in fact, has no dimensions. It is for this reason that a point cannot be rendered.

7. Different conventions are used by programming language and modeling platforms that are available and used for modeling 3D objects and scenes.
   True False
   Feedback: Different conventions are used by programming language and modeling platforms that are available and used for modeling 3D objects and scenes.

8. A rectangle or a triangle is an example of solid geometry.
   True False
   Feedback: A rectangle or a triangle is an example of plane geometry

9. Triangles are closed polygons, with three vertices that are located on the same plane.
   True False
   Feedback: Polygons such as squares and rectangles are two-dimensional.

10. A view is a collection of polygons that are connected together, which is how a polyhedron is defined in 3D geometry
    True False
    Feedback: A mesh is a collection of polygons that are connected together, which is how a polyhedron is defined in 3D geometry

11. Polygons such as squares and rectangles are two-dimensional.
    True False
    Feedback: Polygons such as squares and rectangles are two-dimensional.

12. Euclidean geometry is concerned with how something seems or appears.
    True False
    Feedback: Projective geometry is concerned with how something seems or appears.

13. Euclidean geometry is about what things are actually.
    True False
    Feedback: Euclidean geometry is about what things are actually.

14. According to Euclidean geometry two parallel lines never intersect.
    True False
    Feedback: According to Euclidean geometry two parallel lines never intersect.

15. World space refers to the coordinate system that is local to the object or that applies to that object. True False

Feedback: Object space refers to the coordinate system that is local to the object or that applies to that object.

16. Any translation or rotation you perform when doing a global transformation is done with respect to the scene's reference system.
    True False
    Feedback: Any translation or rotation you perform when doing a global transformation is done with respect to the scene's reference system.

17. If an object is scaled two times along the x-axis, 3 times along the y-axis, and 4 times along the z-axis, the transformation is known as uniform scaling.
    True False
    Feedback: Scaling is said to be uniform if the amount of scaling is equal along all three axes. In uniform scaling, an object is scaled equally along x, y, and z axes

18. Ordered pair refers to two numbers, (x, y) for representing the location of a point with respect to a reference point (origin).
    True False
    Feedback: Ordered pair refers to two numbers, (x, y) for representing the location of a point with respect to a reference point (origin).

19. Einstein is considered as the 'father of geometry'.
    True False
    Feedback: Euclid is considered as the 'father of geometry'.

20. Geometrically, a straight line can be considered as a point traveling in a constant direction.
    True False
    Feedback: Geometrically, a straight line can be considered as a point traveling in a constant direction.

PART II: MULTIPLE CHOICE QUESTIONS

1. _____ is composed of positive values.
    a. Quadrant I
    b. Quadrant II
    c. Quadrant III
    d. Quadrant IV
    e. None of the above

2. What is the area of a rectangle in a Cartesian system with the following vertices: (3, 2), (-3, 2), (-3, -2), (-3, 2) ?
    a. 12 Sq. Units
    b. 15 Sq. Units
    c. 24 Sq. Units
    d. 48 Sq. Units
    e. None of the above

3. The reference point within a coordinate system is known as ___.
    a. Point
    b. Vertex
    c. Dot
    d. Origin
    e. None of the above

4. A point has _____ dimensions.
    a. One
    b. Two
    c. Three
    d. Zero
    e. None of the above

5. A line is ____-dimensional, and can be defined by two points.
    a. One
    b. Two
    c. Three
    d. Zero
    e. None of the above

6. A _____ line represents the shortest distance between two points.
    a. Curved
    b. Straight
    c. Poly
    d. Mini
    e. None of the above

7. _____ is the process of creating an image from a model.
    a. Modeling

b. Compositioning
c. Rendering
d. Culling
e. None of the above

8. In the polar coordinate system, a point is represented as a function of _____.
   a. position
   b. angle
   c. distance
   d. location
   e. both b and c above

9. _____ is the trigonometric function corresponding to ratio of the Opposite side to the hypotenuse?
a. Alpha
b. Sin
c. Cos
d. Tan
e. None of the above

10. _____ is the trigonometric function corresponding to ratio of the adjacent side to the hypotenuse?
f. Alpha
g. Sin
h. Cos
i. Tan
j. None of the above

11. In the polar coordinate system, which of the following is referred to as the radial coordinate?
a. position
b. angle
c. distance
d. location
e. both b and c above

12. Real-world objects such as cups, pens, tables, etc. are ____-dimensional.
a. One
b. Two
c. Three
d. Zero

e. None of the above

13. A point within a coordinate system is also known as ___ .
    a. Point
    b. Vertex
    c. Dot
    d. Line
    e. None of the above

14. An edge is also represented as ___.
    a. Point
    b. Vertex
    c. Dot
    d. Line
    e. None of the above

15. _____ geometry deals with how something seems or appears.
    a. Euclidean
    b. Solid
    c. Plane
    d. Projective
    e. None of the above

16. _____ geometry is known as traditional geometry.
a. Euclidean
b. Solid
c. Plane
d. Projective
e. None of the above

17. Moving an object from one position to another is known as ____.
a. Translation
b. Rotation
c. Scaling
d. Rendering
e. None of the above

18. ____refers to modifying the size and proportion of an object in a 3D scene.
a. Translation
b. Rotation
c. Scaling
d. Rendering
e. None of the above

19. _____ refers to orienting (moving) an object about an axis and center.
a. Translation
b. Rotation
c. Scaling
d. Rendering
e. None of the above

20. π radians = how many degrees?
a. 90
b. 180
c. 270
d. 360
e. None of the above