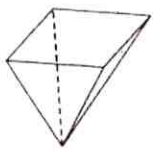
MATH 304 HW 11.4 Name SOLUTION KEY Seat # _____

1. For each polyhedron shown below complete the descriptions (fill in the blanks).



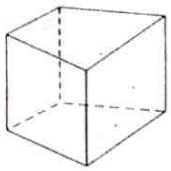
a.

name Square pyramid

# of faces 5

# of vertices 5

# of edges 8



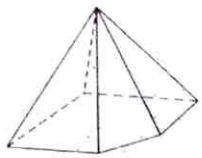
b.

name trapezoidal prism

# of faces 6

# of vertices 8

# of edges 12



c.

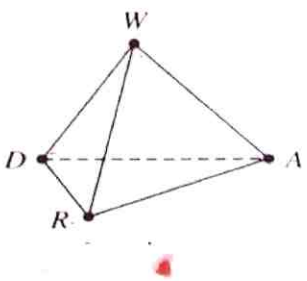
name pentagonal pyramid

# of faces 6

# of vertices 6

# of edges 10

2. For the tetrahedron pictured at the right:



(a) Why would it be classified as a tetrahedron?

It has 4 faces.

(b) What shape polygon are the faces? (are they all the same?)

triangles

(c) What is the intersection of face DWA with face DAR?
(be sure to include the type of geometric object this is)

$\overline{DA}$ it is a segment not a whole line because it is the intersection of triangles not of infinite planes.

(d) What is the intersection of face WRA with edge DR?

point R

3. Indicate whether each statement is true or false by circling the correct choice.

True (False) 1. The net of a triangular prism consists of 3 triangles and 3 rectangles. 2 triangles

True (False) 2. Cones and cylinders are classified as polyhedral. Polyhedra all sides must be polygons

(True) False 3. The net of a cylinder consists of 2 circles and 1 rectangle.

True (False) 4. The net of a cube (square prism) consists of 4 squares. 6 squares

True (False) 5. The height from base to apex of a pyramid is the same as the height of the triangular faces.
slant height up the triangular side is longer than perpendicular height from apex to ground

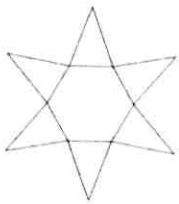
(True) False 6. There is more than one possible net for any rectangular prism (box-shape).

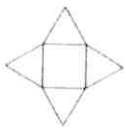
True (False) 7. If two lines do not intersect, then they must be parallel. 3-D (true if restricted to a plane, but in space they could be skew.

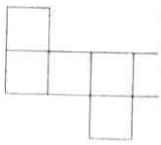
(True) False 8. If two angles are vertical angles, then they must be congruent.

(True) False 9. There is no such thing as a right equilateral triangle.
could have 3 angles all of which are 90° in a triangle.

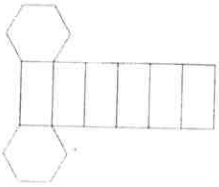
4. Name the polyhedron that each net produces. (specific name, not number of sides)

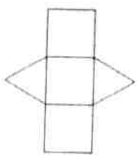






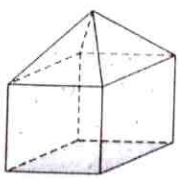
a. hexagonal pyramid b. square or rect. pyramid c. Square pr or cub



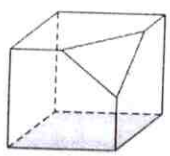


d. hexagonal prism e. triangular prism f. Square pyr

5. For each 3-D figure below, state the number of vertices (V), faces (F), and edges (E) and then determine wheth formula V + F = E + 2 holds true for the figure. (show your computation of the formula).



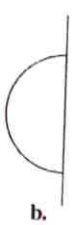
a. V = 9
F = 9
E = 16
Compute formula:
V+F = E+2
9+9 = 16+2
Does the formula work in this case?
true



b. V = 10
F = 7
E = 15
Compute formula:
V+F = E+2
10+7 = 15+2
Does the formula work in this case?
YES

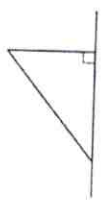
7. The following figure represent a card attached to a wire, as shown. Imagine revolving the wire and the card crea object that is the shape of its path as it revolves. (a) sketch the 3-D object created and (b) give the geometric na object created.

a.
truncated cone



b.
Sphere

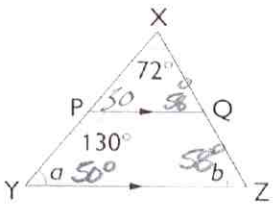
c.
two cones stacked together



cone

The following figures are not drawn to scale.

1. XPY and XQZ are straight lines.
   PQ // YZ
   Find $\angle a$ and $\angle b$.

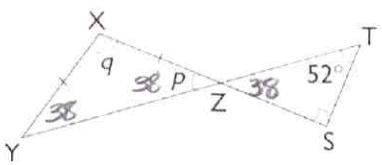


$m\angle a = 50^\circ$ ✓

$m\angle b = 58^\circ$ ✓

72 180
50 +22
122 58

2. XZS and YZT are straight lines.
   XY = XZ
   Find $\angle p$ and $\angle q$.



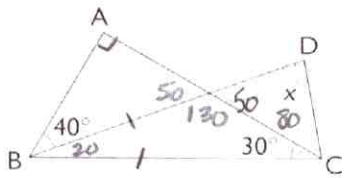
$m\angle p = 38^\circ$ ✓

$m\angle q = 164^\circ$ ✓

90 180
+ 52 −142
142 38

38 180
38 −76
76 104

3. ABC is a right-angled triangle.
   BCD is an isosceles triangle.
   BC = BD
   Find $\angle x$.

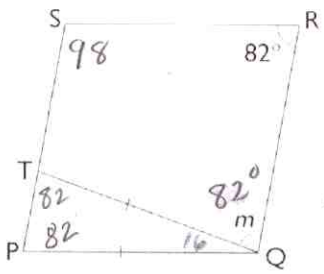


$m\angle x = 80^\circ$ ✓

90 180
40 −130
130 50

$m\angle BCD + m\angle BDC = 1$

4. PQRS is a parallelogram.
   PQ = TQ
   Find $\angle m$.



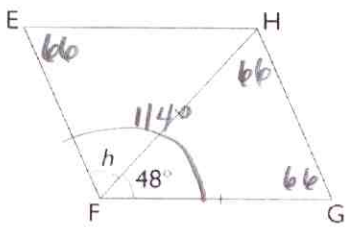
$m\angle m = 82^\circ$ ✓

82 2 1
×2 360 98
164 −164 82
196 180
2 98

180
−164
16

98
−82
16

5. EFGH is a parallelogram.
   FG = FH
   Find $\angle h$.



$m\angle h = 66^\circ$ ✓

180 114
−48 −48
2|132 66°
66

360
−132
2|228
114