

# High School Mathematics Test 2014

Year  
7

## 2D and 3D Shapes

Non Calculator  
Test

### Skills and Knowledge Assessed:

- Name and list properties of common two dimensional shapes.
- Connect three dimensional objects with their nets and other two-dimensional representations (ACMMG111)
- Construct simple prisms and pyramids (ACMMG140)
- Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165)

Name \_\_\_\_\_

Answer all questions in the spaces provided on this test paper by:

Writing the answer in the box provided.

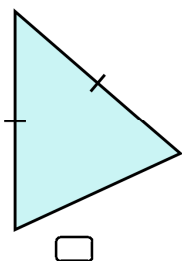
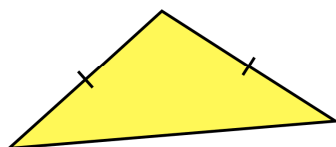
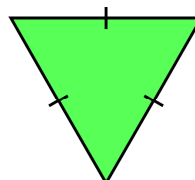
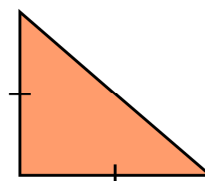
or

Shading in the bubble for the correct answer from the four choices provided.

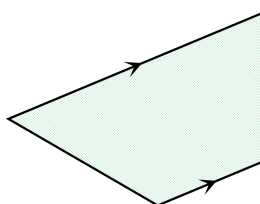
Show any working out on the test paper. Calculators are **not** allowed.

1. Kerry draws an acute isosceles triangle.

Which shape could be her drawing?


☐

☐

☐

☐

2. The shape shown is a :



Rhombus

☐

Kite

☐

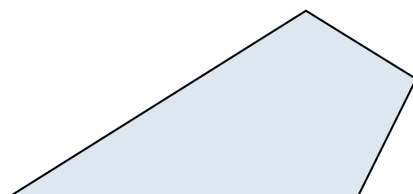
Parallelogram

☐

Trapezium

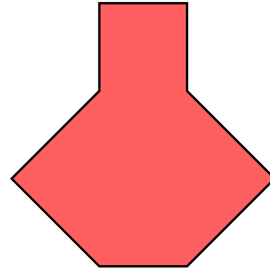
☐

3. Draw the diagonals of the quadrilateral and complete the statement below.



The angle at which the diagonals of this quadrilateral cross is .

4. Which is an accurate description of the shape shown?

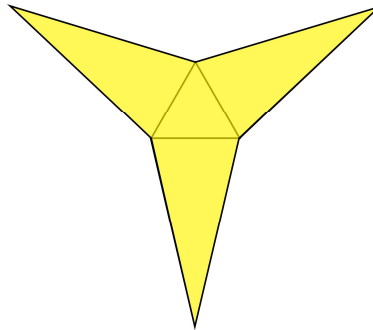


- ☐ A regular hexagon. ☐ An irregular hexagon.
- ☐ An irregular octagon. ☐ A regular octagon.

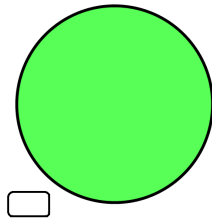
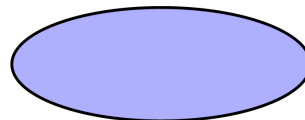
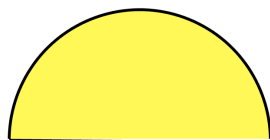
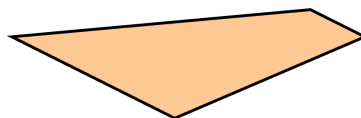
5. Two quadrilaterals which have two pairs of opposite sides parallel are :

- ☐ a rectangle and a trapezium ☐ a kite and a rectangle.
- ☐ a rhombus and a kite. ☐ a rhombus and a square.

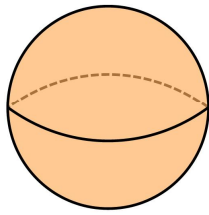
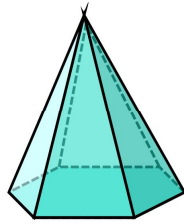
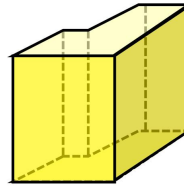
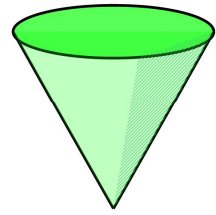
6. Draw in all the axes of line symmetry in this shape.



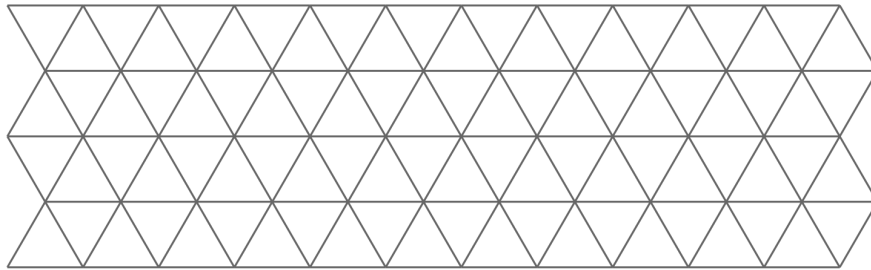
7. Which shape below is a polygon?

☐☐☐☐

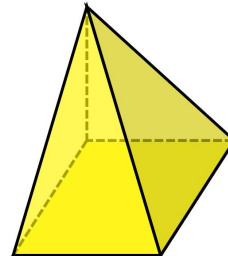
8. Which of the solids is a prism?

☐☐☐☐

9. Use the grid to draw a 3D representation of a triangular prism.

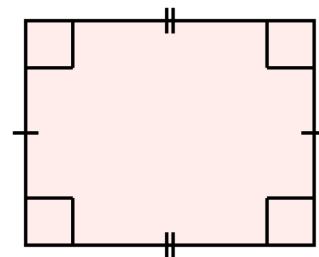


10. How many faces are there on this solid?

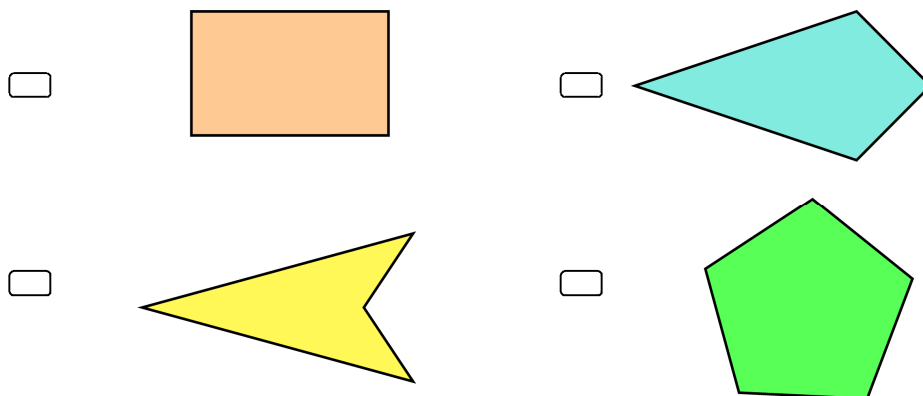


11. Which of these words could **not** be used to classify the shape shown?

- ☐ Parallelogram.
- ☐ Quadrilateral
- ☐ Rectangle.
- ☐ Rhombus.

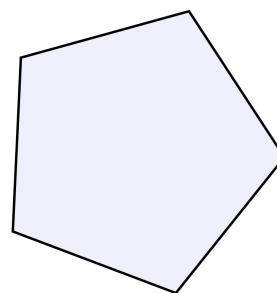
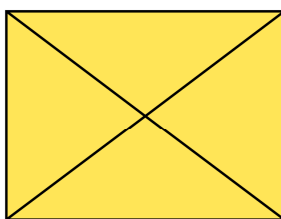


12. Which shape below is not a convex polygon?



13. Kayla has drawn in all the diagonals on the rectangle.

Draw in all the diagonals on the pentagon and complete the statement below by writing a number in the box.



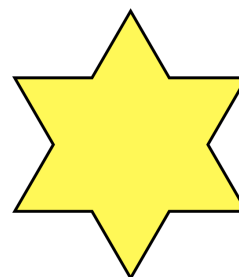
A pentagon has  diagonals than a quadrilateral.

14. Two students make a comment about the shape shown.

Richard : The shape has rotational symmetry of order 6.

Martin : The shape has 3 axes of line symmetry.

Who is correct?



Richard only

☐

Martin only

☐

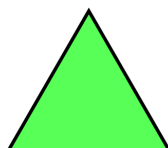
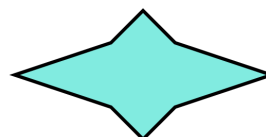
Richard and Martin

☐

Neither of them.

☐

15. Which shape below has rotational symmetry of order 4?

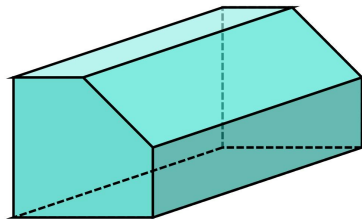
☐☐☐☐

16. Sketch and name a solid which has only four faces, all of which are triangles.

Sketch

Name

17. What is the name of the solid shown below?



18. Which of the following solids has exactly four triangular faces and one square face?

☐

A square prism.

☐

A square pyramid.

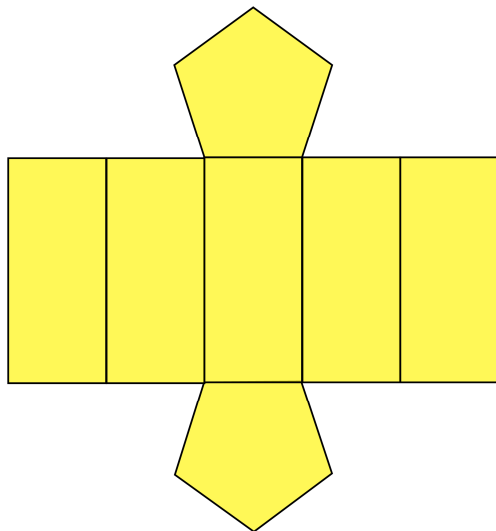
☐

A triangular prism.

☐

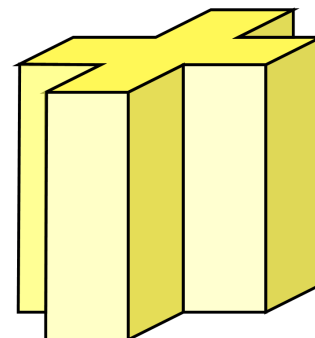
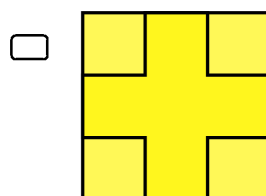
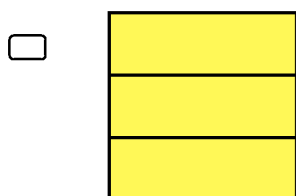
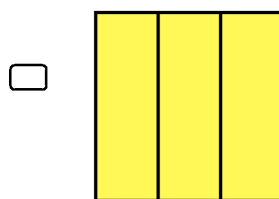
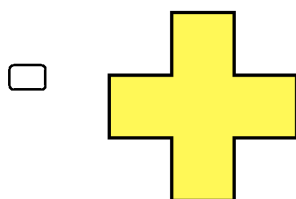
A triangular pyramid.

19. Draw a 3D sketch of the solid whose net is shown.



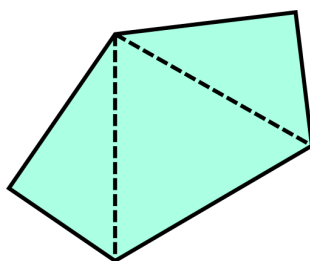
20.

Which would be the front view (elevation) of the solid shown at right?



21.

Two diagonals have been drawn in this polygon, which divides it into three triangles.



What types of triangles are formed?

- ☐ Two acute scalene triangles and an acute isosceles triangle.
- ☐ Two acute scalene triangles and an equilateral triangle.
- ☐ Two right scalene triangles and an acute isosceles triangle.
- ☐ Two right scalene triangles and an equilateral triangle.

22.

Louise is asked to investigate a quadrilateral, so she makes some measurements.

She finds that the diagonals bisect one another, measure 14 cm and 10 cm in length and intersect at an angle of  $75^\circ$ .

Which type of quadrilateral is she investigating?

A parallelogram.

☐

A rectangle.

☐

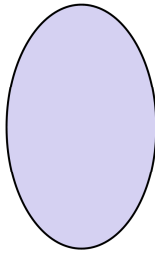
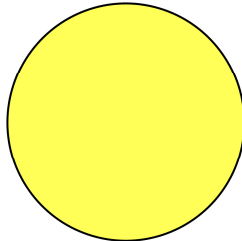
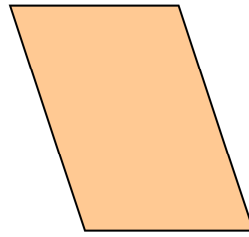
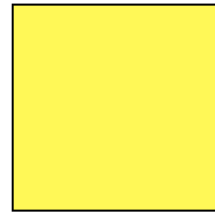
A rhombus.

☐

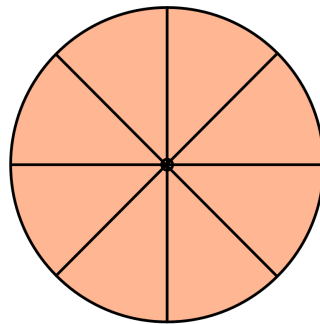
A square.

☐

23. Which shape has both line symmetry and rotational symmetry order 2?

☐☐☐☐

24. James draws a circle and marks four equally spaced diameters. By joining three of the endpoints of the diagonals he makes a triangle.



Which type of triangle is he **not** able to make?

- ☐ An equilateral triangle.    ☐ An isosceles triangle.  
☐ An obtuse angled triangle.    ☐ A right angled triangle.

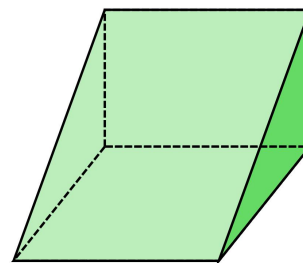
25. A quadrilateral has unequal diagonals.

One diagonal bisects the other at right angles.

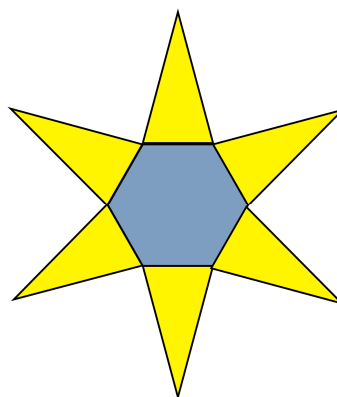
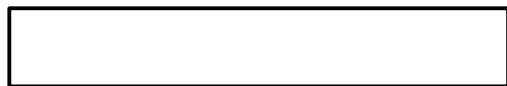
Name the quadrilateral.

26. How many edges and vertices are there on this solid?

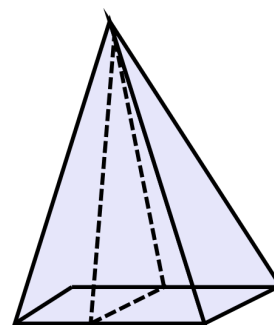
- ☐ 5 edges and 6 vertices.  
☐ 6 edges and 5 vertices.  
☐ 6 edges and 9 vertices.  
☐ 9 edges and 6 vertices.



27. What name would be given to the solid formed from the net shown?



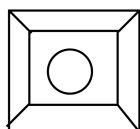
28. The solid shown is cut down the plane of the broken lines.  
Draw the shape of the cut face so formed.



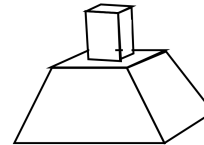
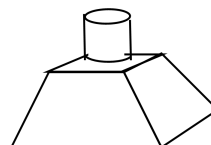
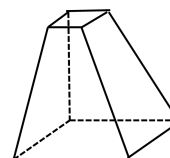
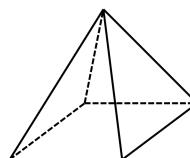
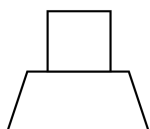
29. Draw a net that could be folded to form a square prism.

30. Which of the solids shown would have the top and side view below?

*Top View*



*Side View*





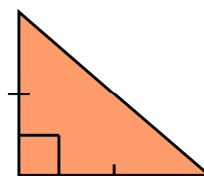
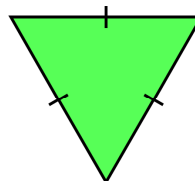
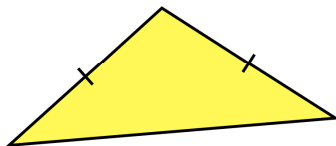
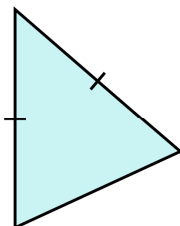
*High School*  
*Mathematics Test 2014*  
2D and 3D Shapes  
**ANSWERS**

<p>Non Calculator Short Answer Section ( 1 mark each)</p>
---

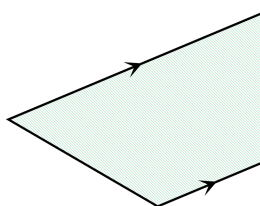
# High School Mathematics Test 2014

1. Kerry draws an acute isosceles triangle.

Which shape could be her drawing?



2. The shape shown is a :



Rhombus



Kite



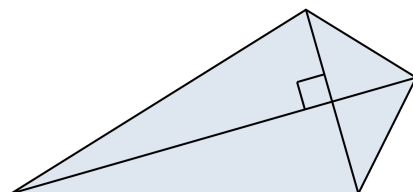
Parallelogram



Trapezium

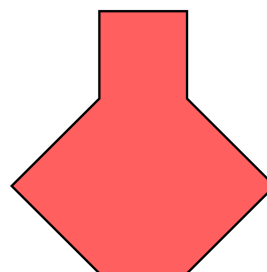


3. Draw the diagonals of the quadrilateral and complete the statement below.



The angle at which the diagonals of this quadrilateral cross is 90°.

4. Which is an accurate description of the shape shown?



A regular hexagon.



An irregular hexagon.



An irregular octagon.



A regular octagon.

5. Two quadrilaterals which have two pairs of opposite sides parallel are :

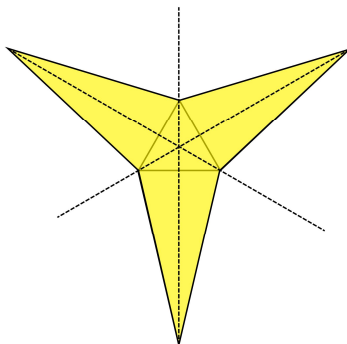
☐ a rectangle and a trapezium

☐ a kite and a rectangle.

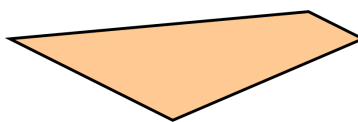
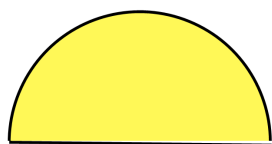
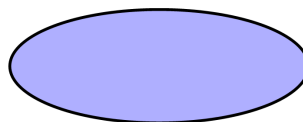
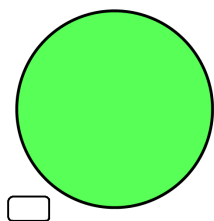
☐ a rhombus and a kite.

☒ a rhombus and a square.

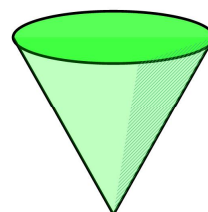
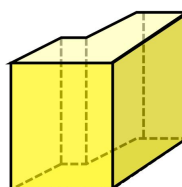
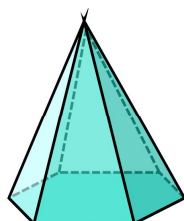
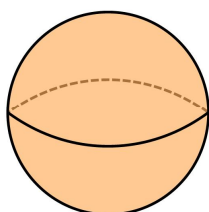
6. Draw in all the axes of line symmetry in this shape.



7. Which shape below is a polygon?

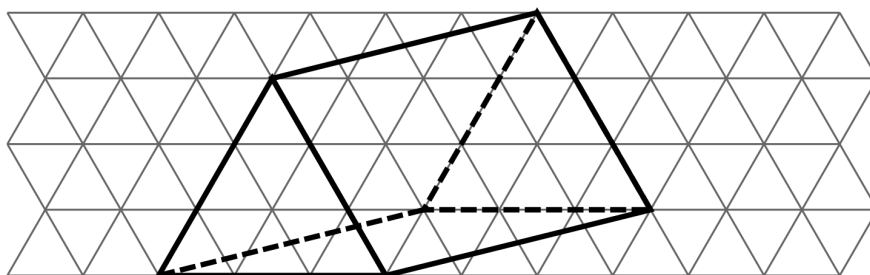


8. Which of the solids is a prism?



9.

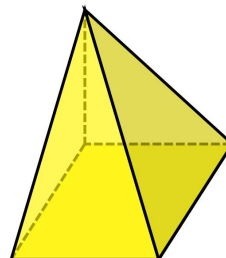
Use the grid to draw a 3D representation of a triangular prism.



10.

How many faces are there on this solid?

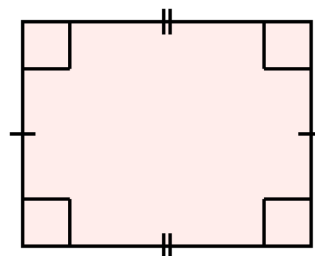
5



11.

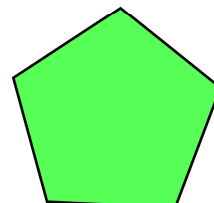
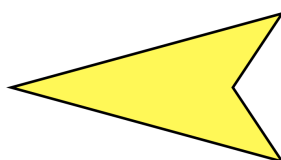
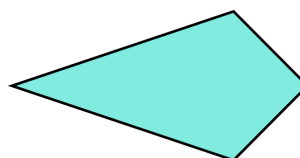
Which of these words could **not** be used to classify the shape shown?

- ☐ Parallelogram.  
☐ Quadrilateral  
☐ Rectangle.  
☒ Rhombus.



12.

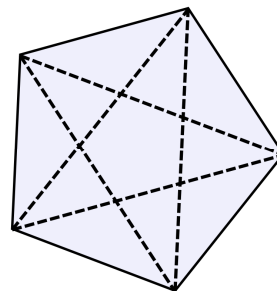
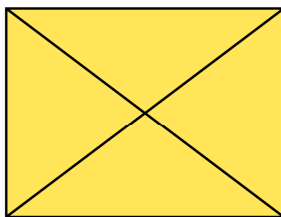
Which shape below is not a convex polygon?



13.

Kayla has drawn in all the diagonals on the rectangle.

Draw in all the diagonals on the pentagon and complete the statement below by writing a number in the box.



A pentagon has 3 more diagonals than a quadrilateral.

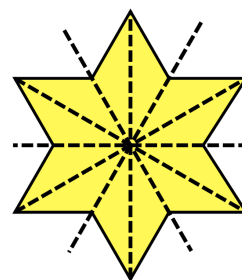
14.

Two students make a comment about the shape shown.

Richard : The shape has rotational symmetry of order 6✓.

Martin : The shape has 6 ~~3~~ axes of line symmetry.✗

Who is correct?



Richard only

☒

Martin only

☐

Richard and Martin

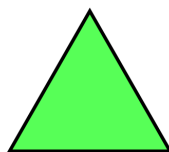
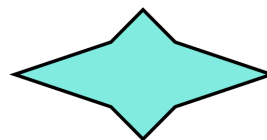
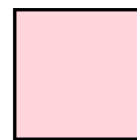
☐

Neither of them.

☐

15.

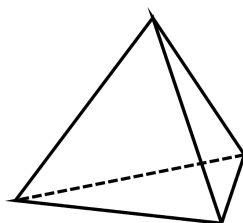
Which shape below has rotational symmetry of order 4?


☐

☐

☐

☒

16.

Sketch and name a solid which has only four faces, all of which are triangles.

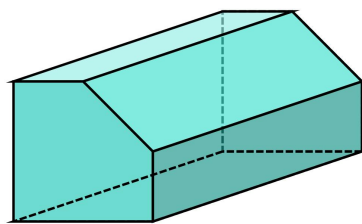
Sketch



Name

Triangular Pyramid (Tetrahedron)

17. What is the name of the solid shown below?

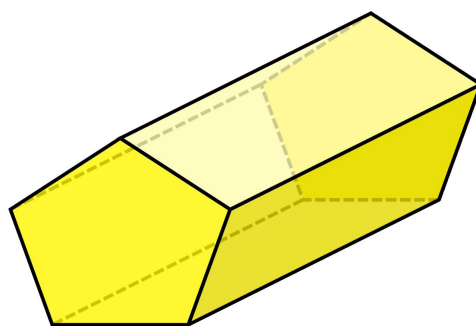
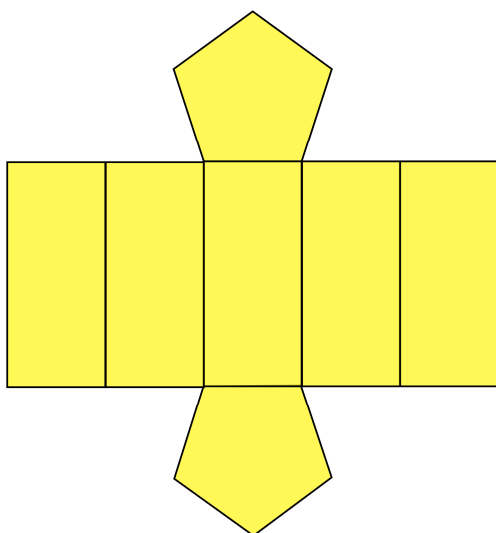


(Irregular) Pentagonal Prism

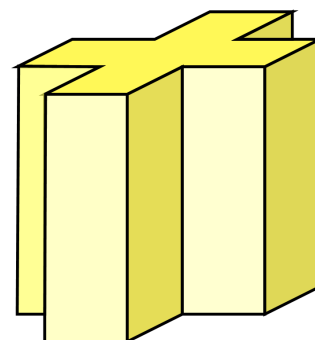
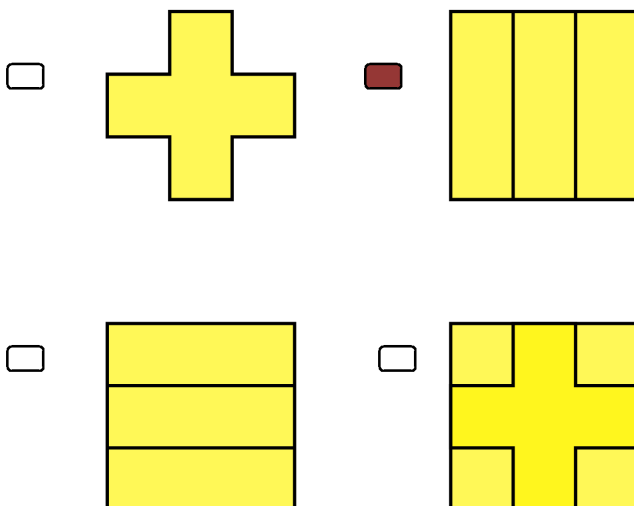
18. Which of the following solids has exactly four triangular faces and one square face?

- ☐ A square prism.                      ☒ A square pyramid.  
☐ A triangular prism.                ☐ A triangular pyramid.

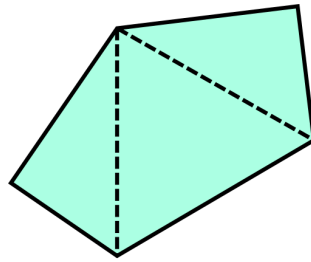
19. Draw a 3D sketch of the solid whose net is shown.



20. Which would be the front view (elevation) of the solid shown at right?



21. Two diagonals have been drawn in this polygon, which divides it into three triangles.



What types of triangles are formed?

- ☐ Two acute scalene triangles and an acute isosceles triangle.
- ☐ Two acute scalene triangles and an equilateral triangle.
- ☐ Two right scalene triangles and an acute isosceles triangle.
- ☒ Two right scalene triangles and an equilateral triangle.

22. Louise is asked to investigate a quadrilateral, so she makes some measurements.

She finds that the diagonals bisect one another, measure 14 cm and 10 cm in length and intersect at an angle of  $75^\circ$ .

Which type of quadrilateral is she investigating?

A parallelogram.



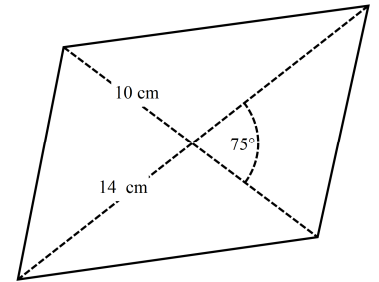
A rectangle.



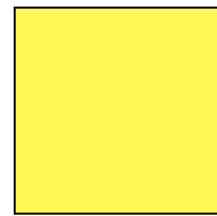
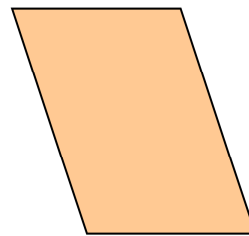
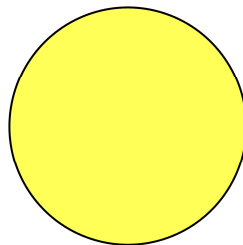
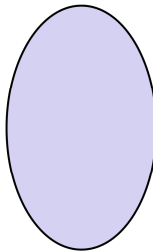
A rhombus.



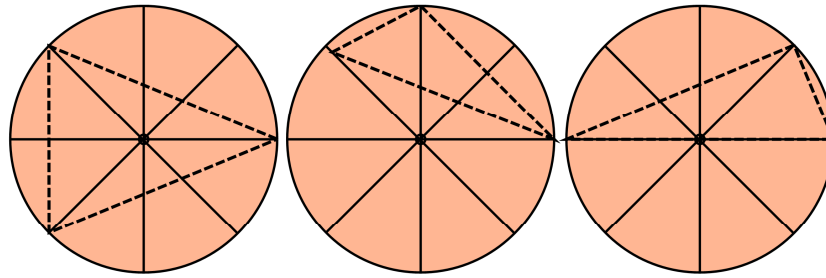
A square.



23. Which shape has both line symmetry and rotational symmetry order 2?



24. James draws a circle and marks four equally spaced diameters. By joining three of the endpoints of the diagonals he makes a triangle.



Isosceles

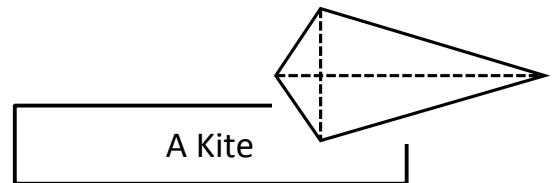
Obtuse

Right

Which type of triangle is he **not** able to make?

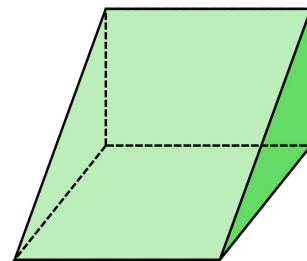
- ☒ An equilateral triangle.    ☐ An isosceles triangle.  
☐ An obtuse angled triangle.    ☐ A right angled triangle.

25. A quadrilateral has unequal diagonals.  
One diagonal bisects the other at right angles.  
Name the quadrilateral.



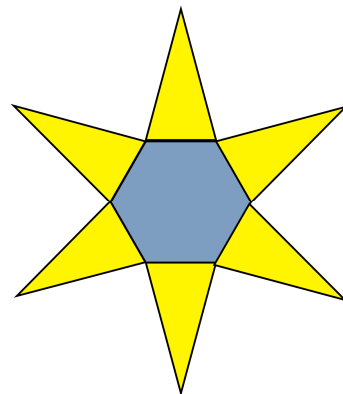
26. How many edges and vertices are there on this solid?

- ☐ 5 edges and 6 vertices.  
☐ 6 edges and 5 vertices.  
☐ 6 edges and 9 vertices.  
☒ 9 edges and 6 vertices.



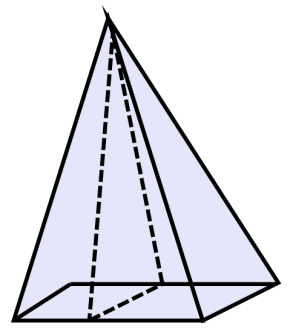
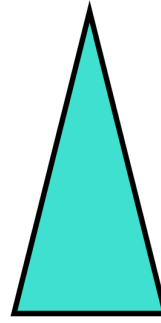
27. What name would be given to the solid formed from the net shown?

(Regular) Hexagonal Pyramid

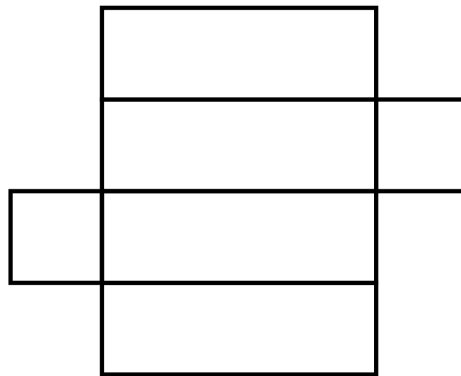




28. The solid shown is cut down the plane of the broken lines.  
Draw the shape of the cut face so formed.

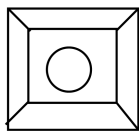


29. Draw a net that could be folded to form a square prism.



30. Which of the solids shown would have the top and side view below?

*Top View*



*Side View*

