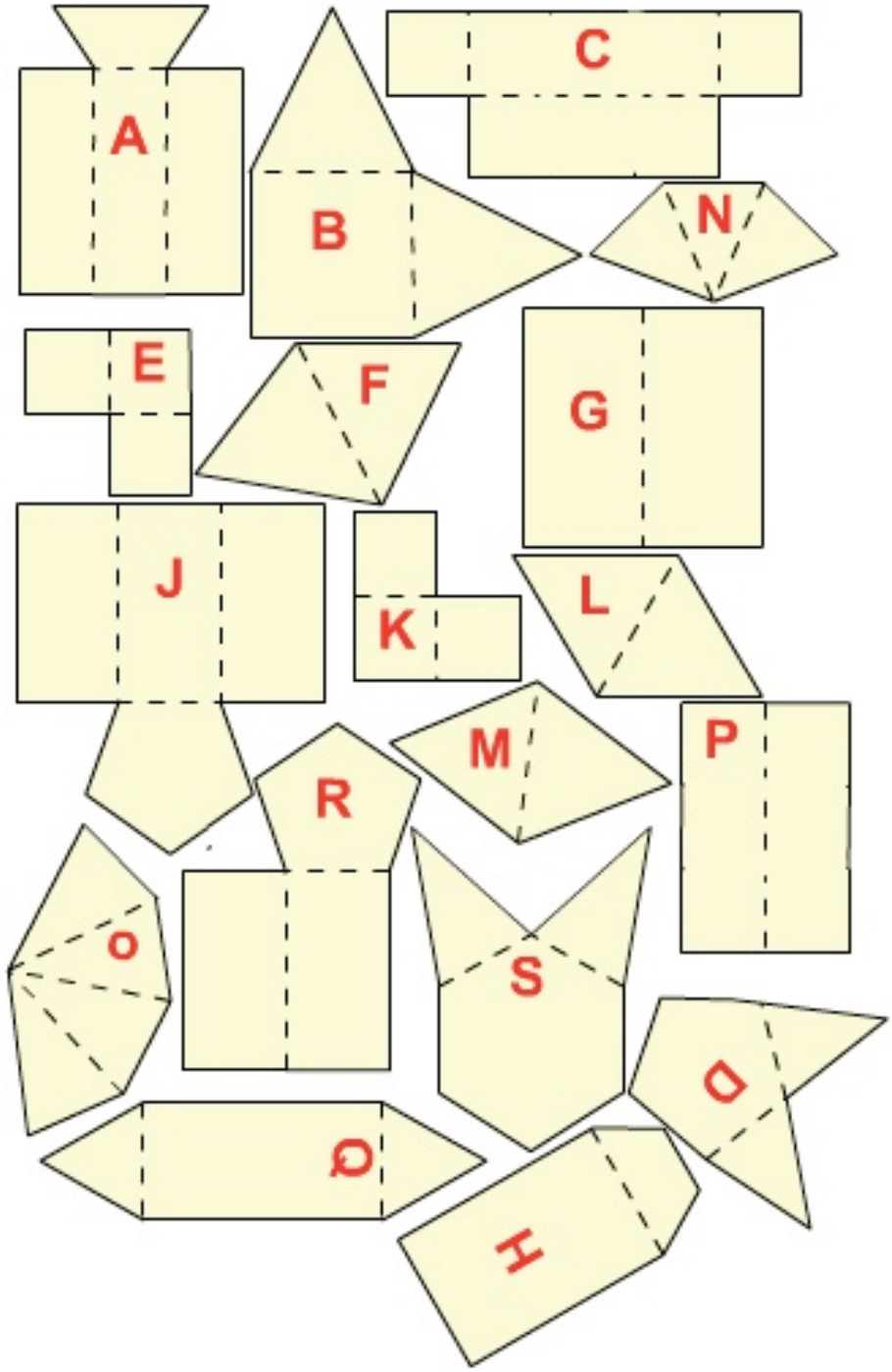
CUT NETS



Here are the nets of 9 solid shapes.

Each has been cut into two pieces. For example K and E go together to make the net of a cube.

Which pieces go together and what shapes do they make?

Help

Start with just 3 shapes using : B, E, F, K, L and M.

Next

You could draw some nets of these and other polyhedra and cut them to make a puzzle for a friend.

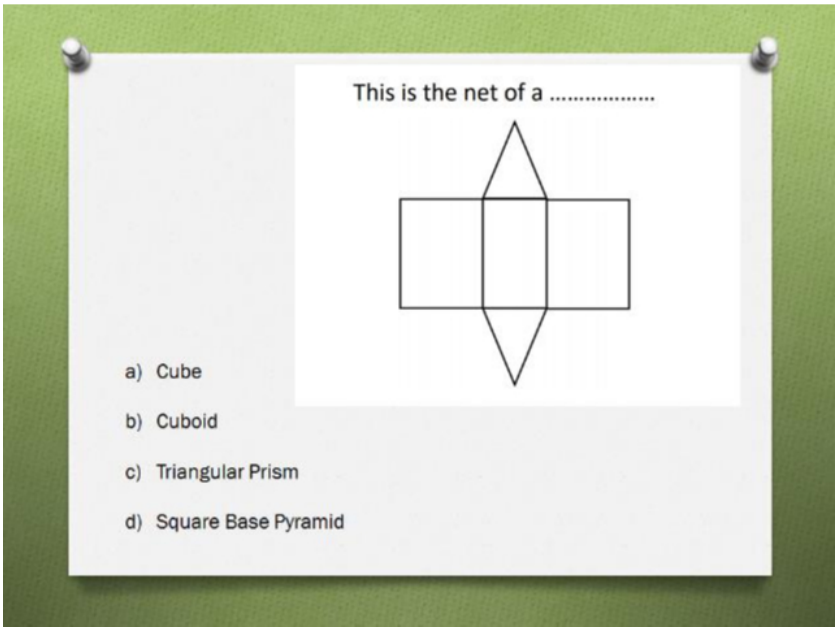
NOTES FOR TEACHERS

SOLUTION

K and E cube
P and C cuboid
L and M tetrahedron
B and F square based pyramid
D and N pentagonal pyramid
S and O hexagonal pyramid
G and Q triangular prism
A and H trapezoidal prism
J and R pentagonal prism

Diagnostic Assessment This should take about 5–10 minutes.

1. Write the question on the board, say to the class:
   "Put up 1 finger if you think the answer is A, 2 fingers for B, 3 fingers for C and 4 fingers for D".
2. Notice how the learners responded. Ask a learner who gave answer A to explain why he or she gave that answer and DO NOT say whether it is right or wrong but simply thank the learner for giving the answer.
3. Then do the same for answers B, C and D. Try to make sure that learners listen to these reasons and try to decide if their own answer was right or wrong.
4. **Ask the class again to vote for the right answer by putting up 1, 2, 3 or 4 fingers. Notice if there is a change and who gave right and wrong answers.** It is important for learners to explain the reason for their answer otherwise many learners will just make a guess.
5. If the concept is needed for the lesson to follow, explain the rightanswer or give a remedial task.



C. is the correct answer.
Common Misconceptions
A.or**B.** Show no understanding of nets or 3D objects

D. There is a common misunderstanding of the difference between prisms and pyramids.

https://diagnosticquestions.com

Why do this activity?

This activity makes learners think hard about the nets of polyhedra. It is not enough to know roughly what they look like. The number and shapes of the faces, and how they are connected are important. The activity will help learners to develop visualisation skills and help them to learn the appropriate vocabulary. The activity gives an excellent opportunity for describing the properties of 3D solids.

Intended learning outcomes

- Review and consolidation of the knowledge and understanding of the properties of 3D solids.
- Development of visualisation skills and language fluency.

Generic competences

In doing this activity students will have an opportunity to:

- develop **visualizsation skills**
- develop the skill of interpreting and creating visual images to represent concepts and situations.

Suggestions for teaching

Resources needed: Copies of the Cut Nets sheet, scissors and selotape.

Have a poster of the polygons on the wall of your classroom with the names written on large and clear. Depending on the learner's experience you may need to explain what a net is but they do not necessarily need to have worked extensively with nets before they have a go at this problem.

Take in a packet from your kitchen that you have opened out into a net and demonstrate how it can be folded back into a solid shape. Hand it around the class so that the learners can open it up and flatten it out then fold it back to form a solid for themselves.

After the diagnostic assessment you could talk about the properties of some solids with the group. One way to do this is to hold up 2 solids and ask the class to talk about their similarities and differences. Show them a prism and a pyramid and help them to learn those two words.

It would be helpful for learners to have copies of the printed sheet of cut nets and to work in pairs to cut out and make the models so that they can talk through their ideas with a partner.

The class could make a 3D poster for the classroom by sticking the models to a backing sheet and writing the names beside the models.

Key questions

- How do you think these two pieces could fit together?
- Which piece could go with this one?
- What shape are the faces on a … ?

Follow up

Making models from paper sticks:
https://aiminghigh.aimssec.ac.za/years-4-7-paper-stick-tetrahedron/
Puzzles: https://aiminghigh.aimssec.ac.za/years-7-10-tets-and-octs-puzzles/

Cube Nets: https://aiminghigh.aimssec.ac.za/years-6-10-cube-nets/
Tetrahedra: https://aiminghigh.aimssec.ac.za/years-9-11-triangles-to-tetrahedra/

Note: The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA, to Years 4 to 12 in the UK and up to Secondary 5 in East Africa. New material will be added for Secondary 6. The mathematics taught in Year 13 (UK) and Secondary 6 (East Africa) is beyond the school curriculum for Grade 12 SA. For resources for teaching A level mathematics see https://nrich.maths.org/12339				
	Lower Primary or Foundation Phase Age 5 to 9	Upper Primary Age 9 to 11	Lower Secondary Age 11 to 14	Upper Secondary Age 15+
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6