

THREE VIEWS

This model is made with 33 small cubes.

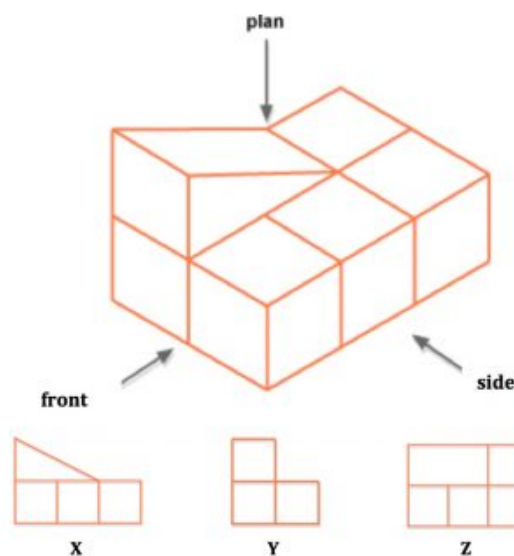
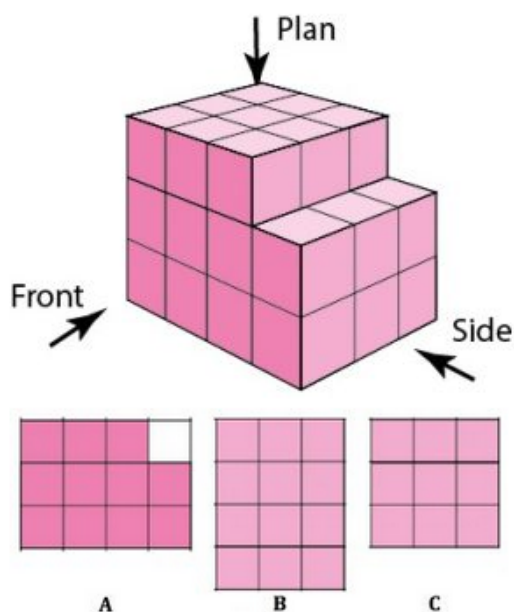
You see three different views:

- when you look straight down from above (the plan)
- when you look at the model from the side (side view)
- when you look at the model from the front (front view).

The three views are shown as A, B and C.

Which is the plan? Which is the side view? Which is the front view?

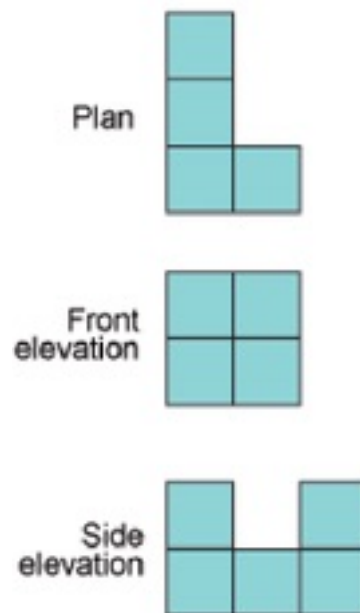
Take some objects you have around, for example a book and a mug, and draw 3 different views of each one.



Now describe this second model and say which of the views X, Y and Z are the plan view, the side view and the front view.

Here are 3 views of another solid. If you have some cubes you might like to make the model for yourself.

Can you draw this model?



SOLUTION

For the first model

A Front view

B Plan

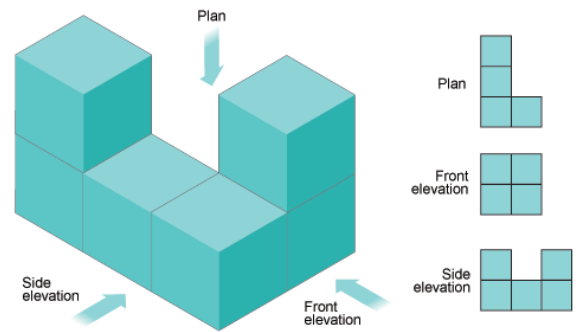
C Side view

For the second model

X Side view

Y Front view

Z Plan



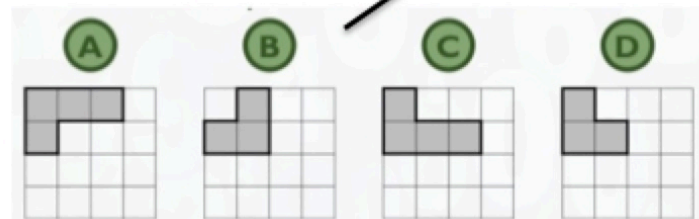
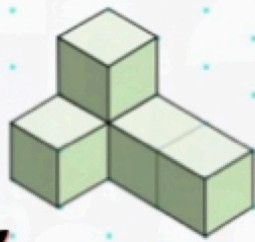
NOTES FOR TEACHERS

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 right answer or give a remedial task.

If you have cubes available, before doing this diagnostic quiz, you might make this model to show the learners and for them to pass around so they can handle it and look at it from different directions.

Which is the front view of this object in the direction of the arrow?



C. is the correct answer.

Common Misconceptions

A. This view is upside down

B. This view is from the right

D. This view is from the left

<https://diagnosticquestions.com>

You might then ask learners to **DRAW ON THEIR SHOWBOARDS** the view from above looking down on the object

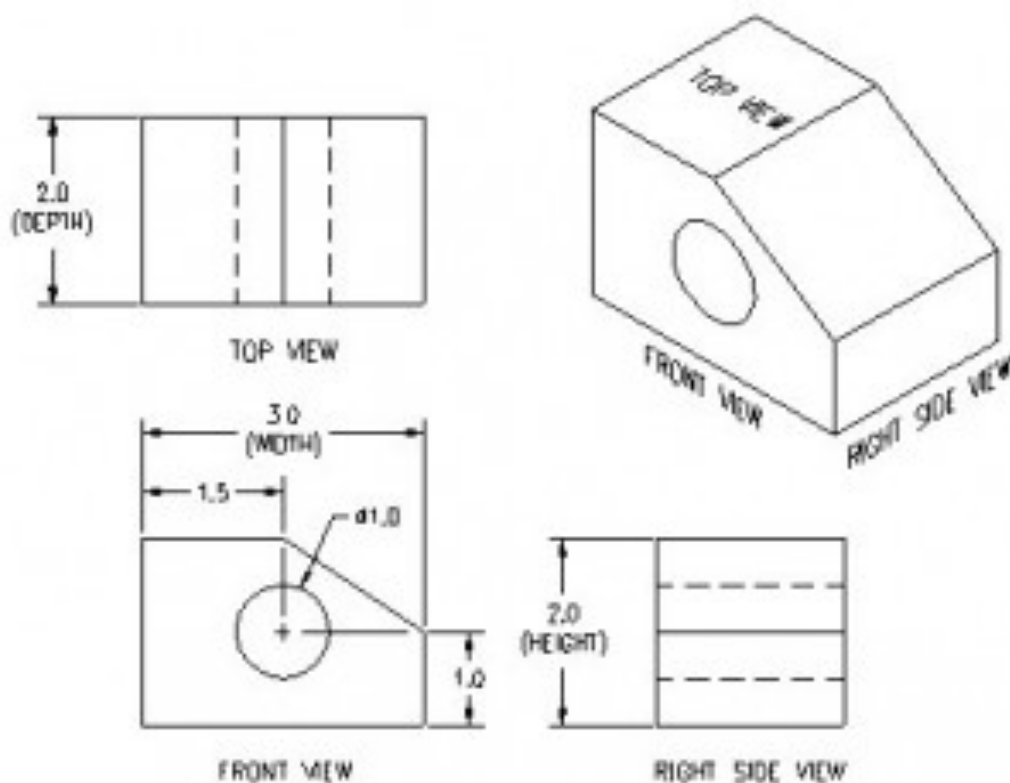
and then

the view from the back.

Why do this activity?

The skill of drawing and interpreting different views of the same object is essential to many human activities. This simple activity teaches learners the basic principals of plan and elevation drawings and provides learners with the opportunity to develop these important visualisation skills and to draw and interpret diagrams. The 'real world' applications include:

- making toy models from instructions (e.g. Lego, Meccano)
- interpreting assembly diagrams for putting together flat packs of furniture or other manufactured items such as a bicycle that arrives in parts
- building plans and architectural diagrams
- engineering drawings and accurate plans
- interpreting body scans and other images of the human body in medicine and surgery.



At some stage the learners could be shown and discuss this example of an engineering drawing.

Intended learning outcomes

To understand the basic principals behind plan and elevation drawing.

To develop visualisation and observation skills.

To develop skills in drawing and interpreting diagrams.

Possible approach

Cubes such as Multilink and isometric paper and squared paper would be useful here but not essential.

You might like to make copies of page 1 for worksheets.

Start with the diagnostic question. Then, if you have 33 cubes available, you might introduce the activity by showing the learners the model and turning it around to show the three views, then sketching them on the board and asking them each time to put up one finger for A, 2 fingers for B and 3 fingers for C to answer the questions “Which is the plan? Which is the side view? Which is the front view?”



Figure A

This is a suitable activity for small groups of learners. They can start by drawing the 3 view of some familiar objects like a mug, a book or ...

It is helpful for them to have cubes to construct the models and they will need 6 cubes for each group and then a few more for the extension question.

Key questions

What can you see from that direction?

What is hidden when you look at the object from that direction?

Possible support

Here are more isometric views of different models for which learners can first make models with cubes and then make plan and elevation drawings of the three views.

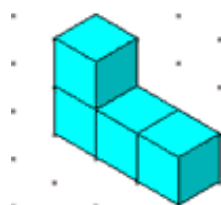


Figure 1



Figure 2

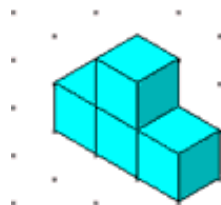
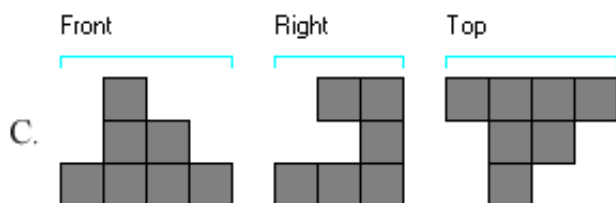
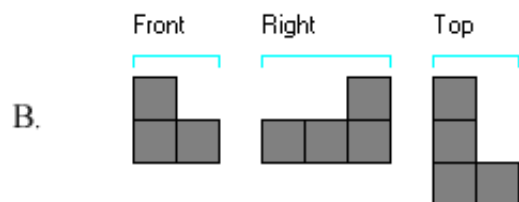
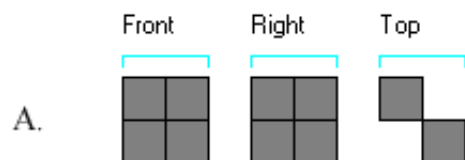


Figure 3



Figure 4



Possible Extension

Here are some more plan and elevation drawings for learners to make sketches the models from cubes and then to make sketches of them.

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.

Note: The mathematics taught in Year 13 (UK) and Secondary 6 (East Africa) is **not** included in the school curriculum for Grade 12 SA.

	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