

Assessing students' work

The following descriptions indicate typical levels of performance. After each description is an example of some work at this level.

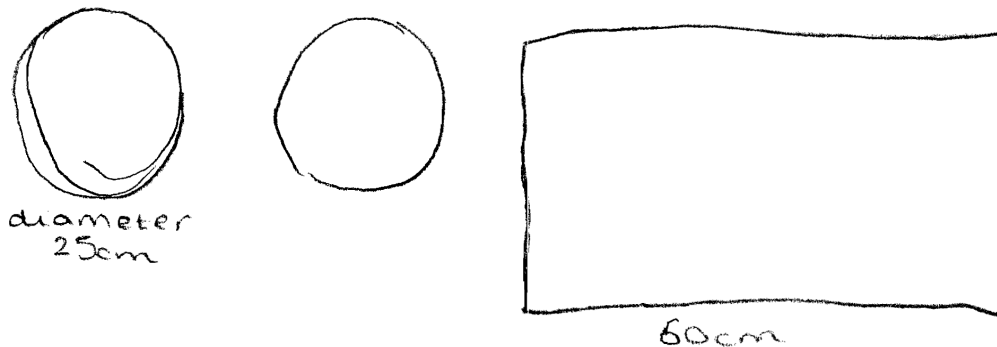
Little progress

- **Representing:** Simplifies the problem by identifying and sketching the shapes of the pieces from which the bag is to be constructed.
- **Analysing:** Transfers some dimensions of the bag to the drawing.
- **Interpreting and evaluating:** Ignores the assumptions and constraints in making the bag.
- **Communicating and reflecting:** Shows some sketches, but these are incomplete and measurements are missing or incorrect.

Sample response: Ashley

Ashley draws a diagram showing the main pieces. Although he has shown the length of 60 metres, he may not know what the diameter means as this is not shown. No attempt has been made to consider seams nor to calculate missing dimensions.

Sports bag.



Questions for Ashley:

Ashley could be encouraged to improve his response by asking the following questions:

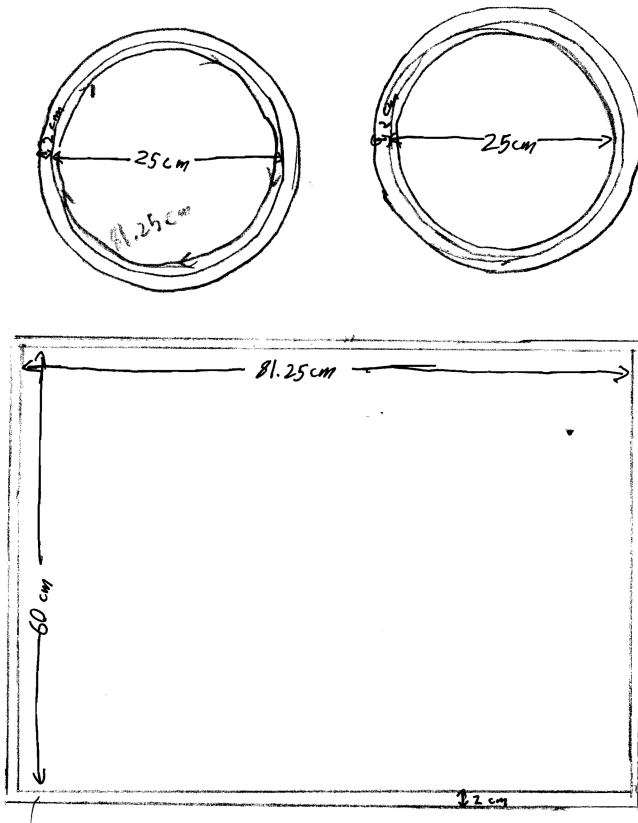
- *Can you show me exactly where the diameter of 25 cm is?*
- *How could you work out the missing length on the rectangle? Do you have a method for doing this?*
- *Have you used all the information in the question?*
- *How can you show the seams on your drawings?*

Some progress

- **Representing:** Simplifies the problem by identifying and sketching the shapes of the pieces from which the bag is to be constructed.
- **Analysing:** Transfers some dimensions of the bag to the drawing. Makes connections between dimensions. Recognises that the material for the body of the bag needs to be the same length as the circumference of the bag.
- **Interpreting and evaluating:** Considers some of the assumptions and constraints in making the bag.
- **Communicating and reflecting:** Sketches and labels the pieces required, with some inaccuracies.

Sample response: Chris

Chris draws a correct diagram showing two circles with measurements allowing 2 cm for seams. No calculations are shown, but the diagram shows that the incorrect circumference of the circle is equal to the length of the rectangle.



Questions for Chris:

Chris could be encouraged to improve her response by asking the following questions:

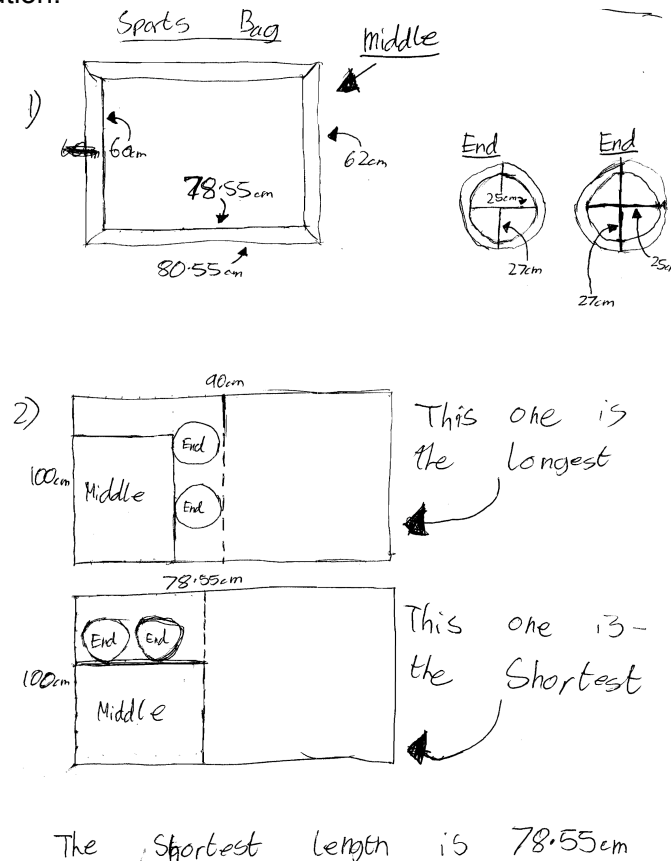
- *Could you explain how you have calculated the 81.25 cm length of the rectangular piece? Can you check your working for this?*
- *Can you calculate and show the measurements including the seams?*
- *Can you show me how you would cut these pieces from a roll of cloth one metre wide, wasting the least material?*

Substantial progress

- **Representing:** Simplifies the problem by identifying and sketching the pieces from which the bag is to be constructed. Chooses appropriate methods to calculate missing dimensions. Shows how pieces might fit together on the roll of cloth.
- **Analysing:** Transfers dimensions of the bag to the drawing. Makes connections between dimensions. Recognises that the material for the body of the bag needs to be the same length as the circumference of bag. Tries to determine the best way of using the cloth to minimise waste. Some errors may be present.
- **Interpreting and evaluating:** Considers most of the assumptions and constraints in making the bag. Takes account of material needed for seams.
- **Communicating and reflecting:** Describes method and solution effectively, using words and sketches. Some inaccuracies may be present.

Sample response: Jake

Jake correctly draws the pieces, calculates the missing dimension of the rectangle successfully and remembers to take account of the seams. He forgets, however, to add 2 cm to *both* sides of the rectangle. He tries two different arrangements of the pieces on the roll of cloth, and presents his reasoning clearly. Jake does not allow for the seams on his optimal solution.



Questions for Jake:

Jake could be encouraged to improve his response by asking the following questions:

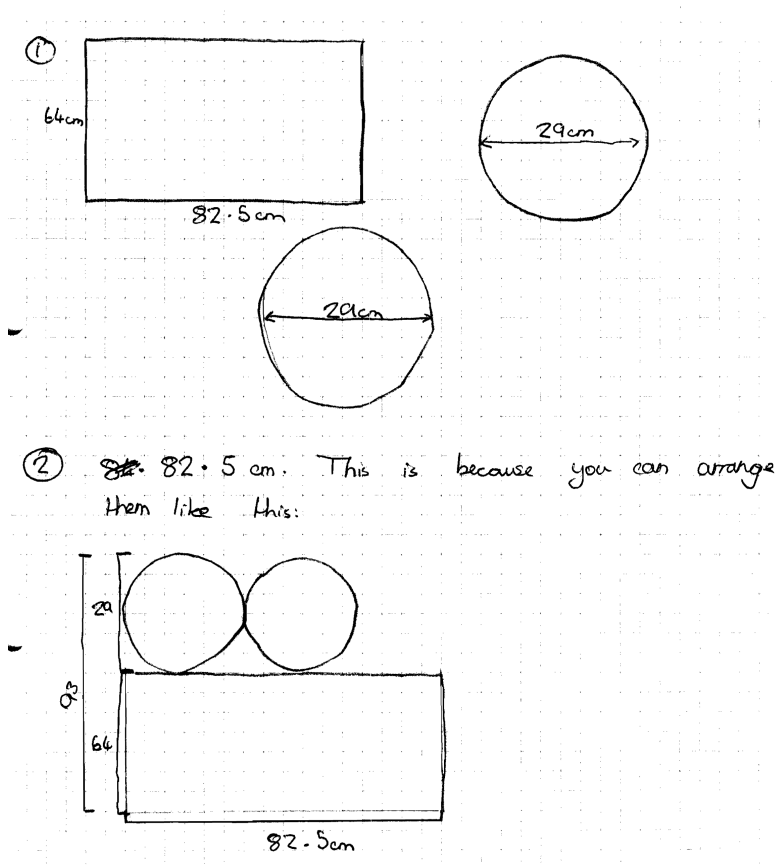
- *Could you explain how you have calculated the outside measurements of the rectangle, including the seams?*
- *Can you show more clearly how the different shapes fit on the roll of cloth? Convince me that they fit, including the seams!*

Task accomplished

- **Representing:** Simplifies the problem by identifying and sketching the pieces from which the bag is to be constructed. Chooses appropriate methods to calculate missing dimensions. Shows how pieces might fit together on the roll of cloth.
- **Analysing:** Transfers dimensions of the bag to the drawing. Makes connections between dimensions. Recognises that the material for the body of the bag needs to be the same length as the circumference of bag. Accurately determines the best way of using the cloth to minimise waste.
- **Interpreting and evaluating:** Considers all assumptions and constraints in making the bag. Takes account of material needed for seams.
- **Communicating and reflecting:** Describes method and solution effectively and accurately, using words and sketches.

Sample response: Sam

Sam shows two circles and a rectangle with correct dimensions (including the seam allowance). Missing dimensions have been calculated accurately. He correctly shows how the pieces can be arranged on a 1 metre roll of cloth. His work is clear and easy to follow, although some additional explanation would have been helpful.



Questions for Sam:

Sam could be encouraged to improve his response by asking the following questions:

- *Would you explain how you have calculated the 82.5 cm and 29 cm dimensions?*
- *Can you explain how you can be sure that you have found the best possible arrangement?*