Measures

Area and Perimeter

Designing Gardens

Grading Rubric

What learners can typically do.

Understanding and Connecting	**g** **The learner**	**h** **The learner**	**i** **The learner**	**j** **The learner**
Use the grid to make drawings of gardens that have an area of $12m^2$. How many different garden designs can you make that have an area of $12cm^2$? If each garden has to have a fence around its perimeter, would the same amount of fencing be needed for each of them?	Uses a ruler to draw an enclosed 2-dimensional shape or shapes of $12cm^2$ to represent a garden of $12m^2$. Counts squares to check response. Counts each line segment of each square in turn.	Responds by drawing one or more rectangles. Skip counts rows or columns. Measures perimeter accurately using a ruler. Explores perimeters and notices differences and patterns.	Responds by drawing rectangles and compound shapes. Combines skip counting with other systematic methods for calculating the area. Notices differences and provides at least a partial rationale for relationship between area and perimeter.	As for learner i, but rationale articulates a convincing argument for how perimeter can vary when area stays constant. E.g. If the garden is very long and thin - say 12m in length and 1m in width, that will be a larger area because that area is stretched out. A shorter, wider garden would have a smaller perimeter.

Design gardens that have at least one curved wall. What might the designs look like?	Uses reasonable estimation to produce shapes with at least one curved side.	Produces shapes with one or more curved sides. Counts squares and uses estimation of partial squares to confirm area.	Produces curved shapes using a compass and counts squares for area. May adjust circles created on the basis of observation of errors/ variances in initial attempts.	Analyses the relationship between diameter and circumference to make inferences about area, tested by counting squares.
The gardens have to be shrunk in area by a half. Draw the new designs. The shapes have to remain the same. Does the fencing for each also reduce by half?	Produces smaller figures, may not be accurately halved on all measures.	Produces smaller figures, either consistently with halved area or perimeter measures.	Produces smaller figures, either consistently with halved area or perimeter measures. Describes the area/perimeter relationship between original and new shapes.	Produces figures of halved area consistently. Provides a rationale for the area/perimeter relationship between original and new shapes.