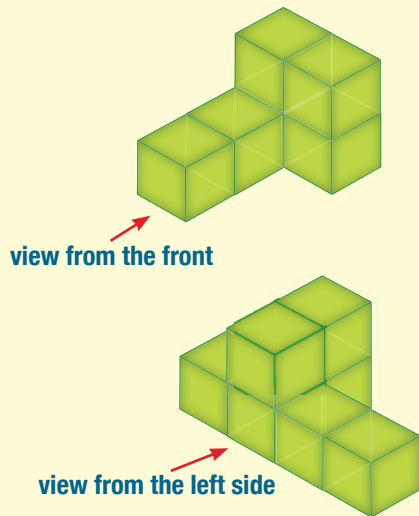# Views

3-D shapes can be drawn from different **views**.

These show a **3-dimensional picture** of the same model from two different directions.

view from the front

view from the left side

Discussion

• Make this model.

• Rotate the model until you can see the front view and right side views shown.

• Draw what you can see from the right side. Is this view different from the left side view?

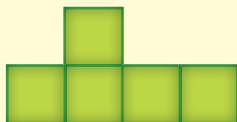• What do you notice about the number of cubes you can see from each view?

The **front, side and plan (*top or bird's eye*) views** of a shape show what you would see if you were looking at the shape as **2-dimensional**.
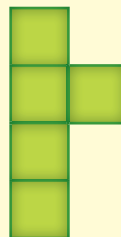
These show the front, right side and plan views of the 3-dimensional model above.
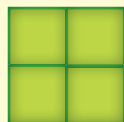
front view   **left side view**

plan view

These views are what you would see if you squashed your shape flat like a pancake.
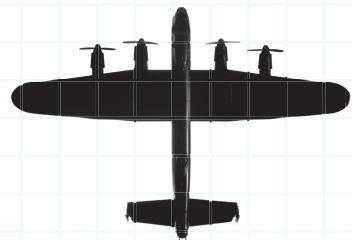
Example

These show the side, front and plan views of the same plane.
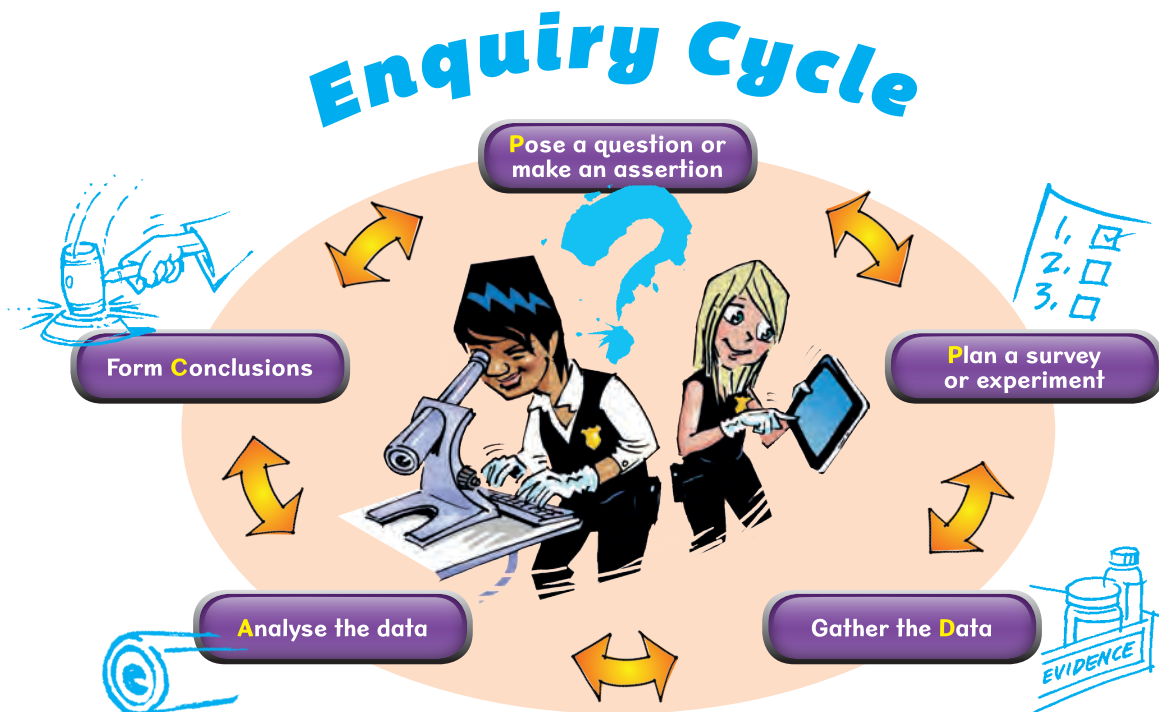
side view   **front view**

plan view

Discussion

• Who in their job might need to draw front, side and plan views of things?

The Enquiry Cycle

This Enquiry Cycle diagram shows the steps you need to do to carry out a survey.

Enquiry Cycle

- **P**ose a question or make an assertion
- **P**lan a survey or experiment
- **G**ather the **D**ata
- **A**nalyse the data
- Form **C**onclusions

The arrows with heads on both ends show that sometimes you need to go back to an earlier step in the cycle.

Example   When forming conclusions you might realise that you need another graph or you need to collect some more data.

This section gives you practice for each step of the Enquiry Cycle.

Once you have done all of the activities, either choose one of the rich tasks from page 330 and 331 or choose something else to do a survey about.

Carry out the Enquiry Cycle steps for **your** survey.

Step 1 – Pose a question

Think of a question to which you would like to know the answer.

There are three types of questions, summary, comparison and relationship.

Example   A phone company wants to know which ages under 20 to target when advertising mobile phones.

1   **Summary questions** ask questions about a single set of data.

> **Example**   *What fraction of each age group under 20 owns a mobile phone?*

2   **Comparison questions** compare two or more sets of data.

> **Example**   *Do more boys or girls own a mobile phone?*

3   **Relationship questions** ask if there is a relationship between variables.

> **Example**   *Is age related to whether or not a student owns a phone?*

> When thinking of questions for your survey try all three types of questions.

Activity 2

1   Is each of these questions a summary, a comparison or a relationship question?

> a   What is the usual bedtime of 10-12-year-old students?
>
> b   Are 10- and 11-year-old boys taller than 10- and 11-year-old girls?
>
> c   Do older students get more pocket money?
>
> d   Are Room 8 students better at throwing a ball than Room 11 students?
>
> e   What do 10-year-old students like doing after school and in the weekends?
>
> f   Do students with longer legs run faster?

> Think about who might want to know the answers to these questions.

2   Think of two questions that you might want to ask about your class. Say if each is a summary, comparison or relationship question.

Step 2 - Plan the survey

Once you have posed a question you need to **plan** your survey.

Think about each of these questions.

1 What data do you need to collect to answer your question?

2 Which units will each of the **variables** have?

> A **variable** is the name we give data that is being collected.

3 How will you collect the data –
   a data collection sheet?   a questionnaire?   observation ?

4 How much data do you need to collect and where from?

Discussion

• Give three examples of variables.

•

> I asked each of the students in my class to tell me their height to the nearest cm.

Why did Jess ask for it in cm?
Why to the nearest cm?

• Which units might you use for this data?
   – Time taken to walk from Room 8 to the hall   – Length of fingers and thumbs of men
   – Age of different kinds of pets at the vet clinic

Step 3 - Collect the data

Collect the data using a data collection sheet (page 332).

Decide how to display your data (see **Chapter 19**).

EVIDENCE

Activity 3

THINK SHARE

1 a

> I wonder if more boys or girls in my class use the computer room at lunchtime?

Lewis asked his classmates if they used the computer room at lunchtime.
What else should he ask each person?

Lewis

Conduct statistical investigations using the statistical enquiry cycle: gathering, sorting ... multivariate category and whole number data ...identifying patterns and trends in context within and between data sets, communicating findings using data displays. Evaluate the effectiveness of different displays in representing the findings of a statistical investigation undertaken by others.

Enlargement

When a shape is **enlarged,** each length is multiplied by the same amount.

Example 1
Each side on the blue rectangle is two times longer than the same side on the green rectangle.

3

4
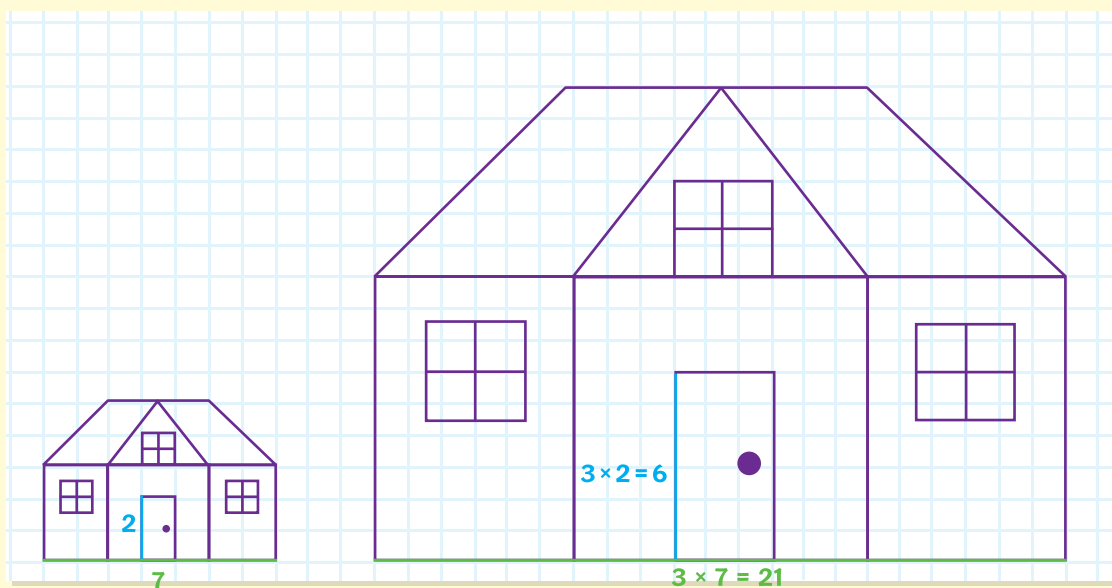
$3 \times 2 = 6$

$4 \times 2 = 8$
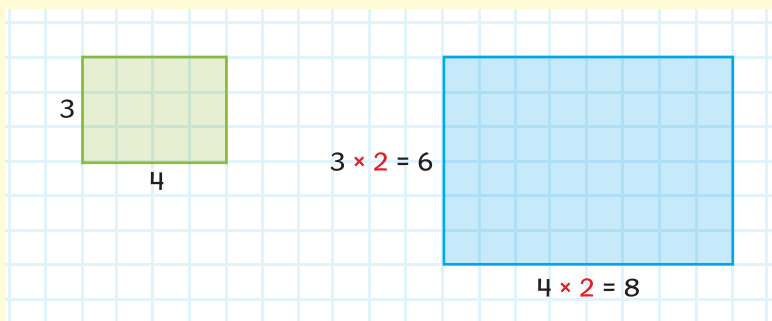
When each side on the enlarged shape is two times longer, the **scale factor** for the enlargement is **2**.

Discussion

- What does a scale factor of 3 mean?
- How long would each side of the green rectangle be if it was enlarged by a scale factor of 3?
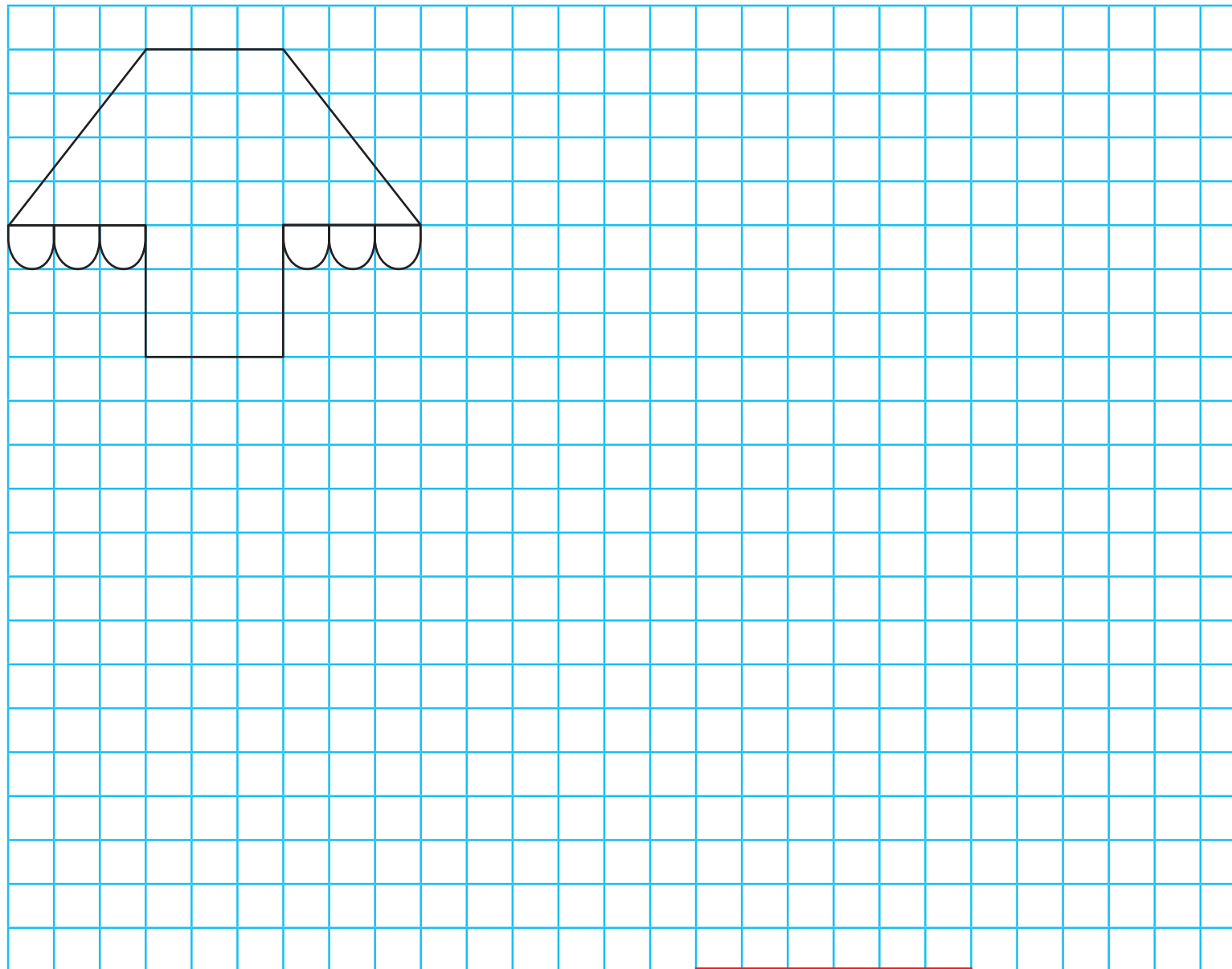
Example 2
The picture of the house has been enlarged by a **scale factor of 3**.
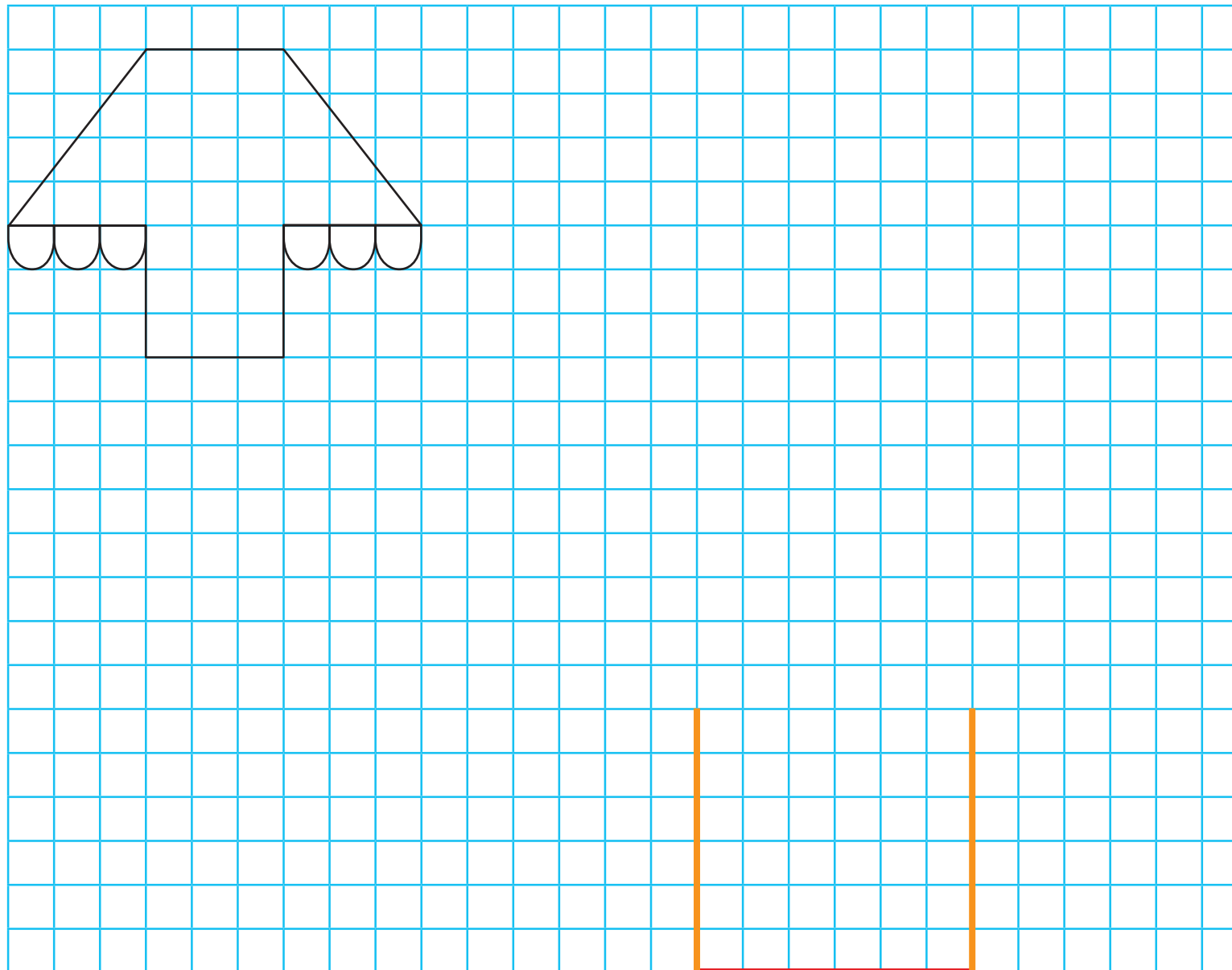Each length on the bigger house is **3 times longer** than on the smaller house.

2

7

$3 \times 2 = 6$

$3 \times 7 = 21$

Describe the transformations (reflection, rotation, translation or enlargement) that have mapped one object onto another.

HOW I GROW

Enlarge this lamp by a scale factor of 2.

HOW I GROW CONTINUED
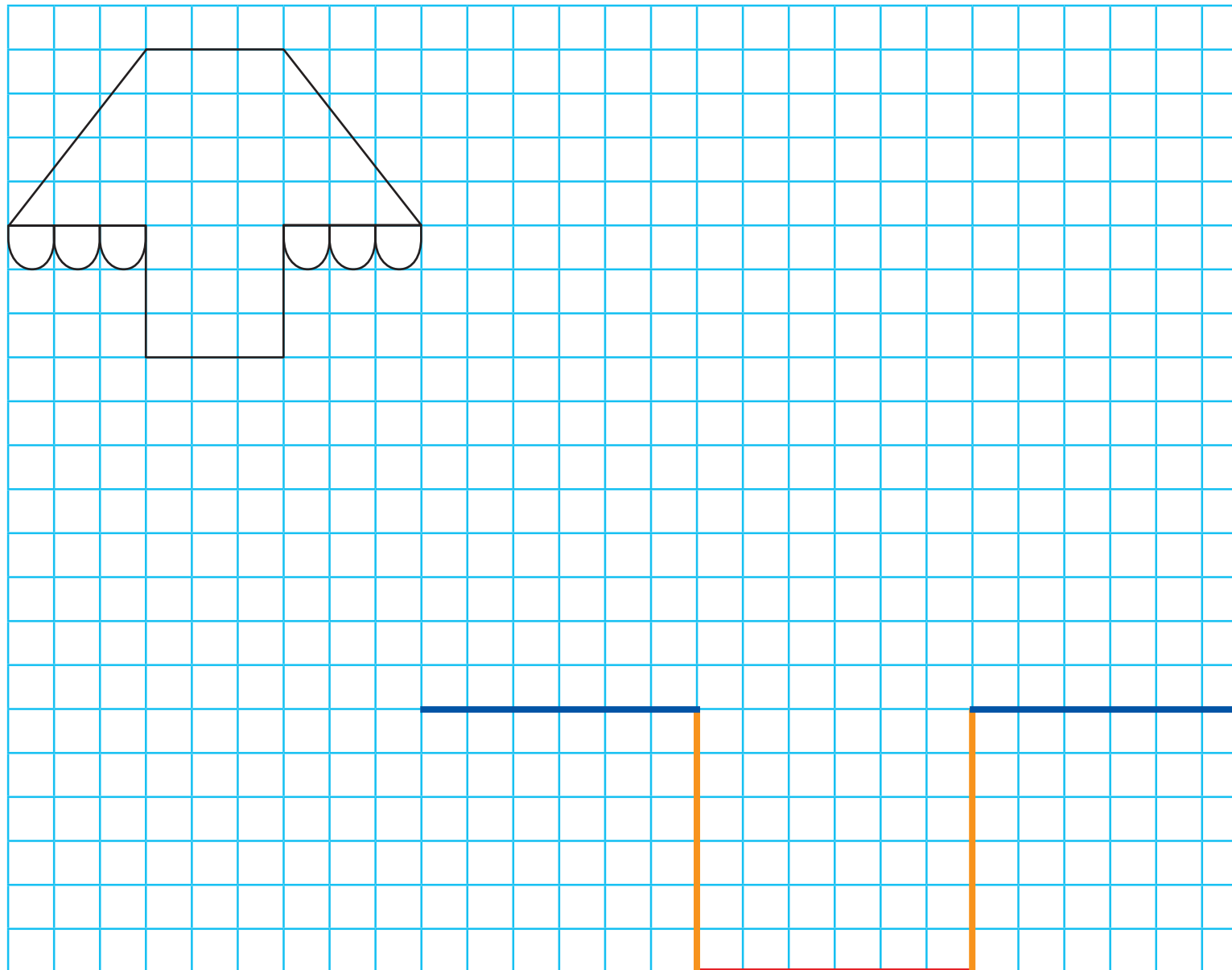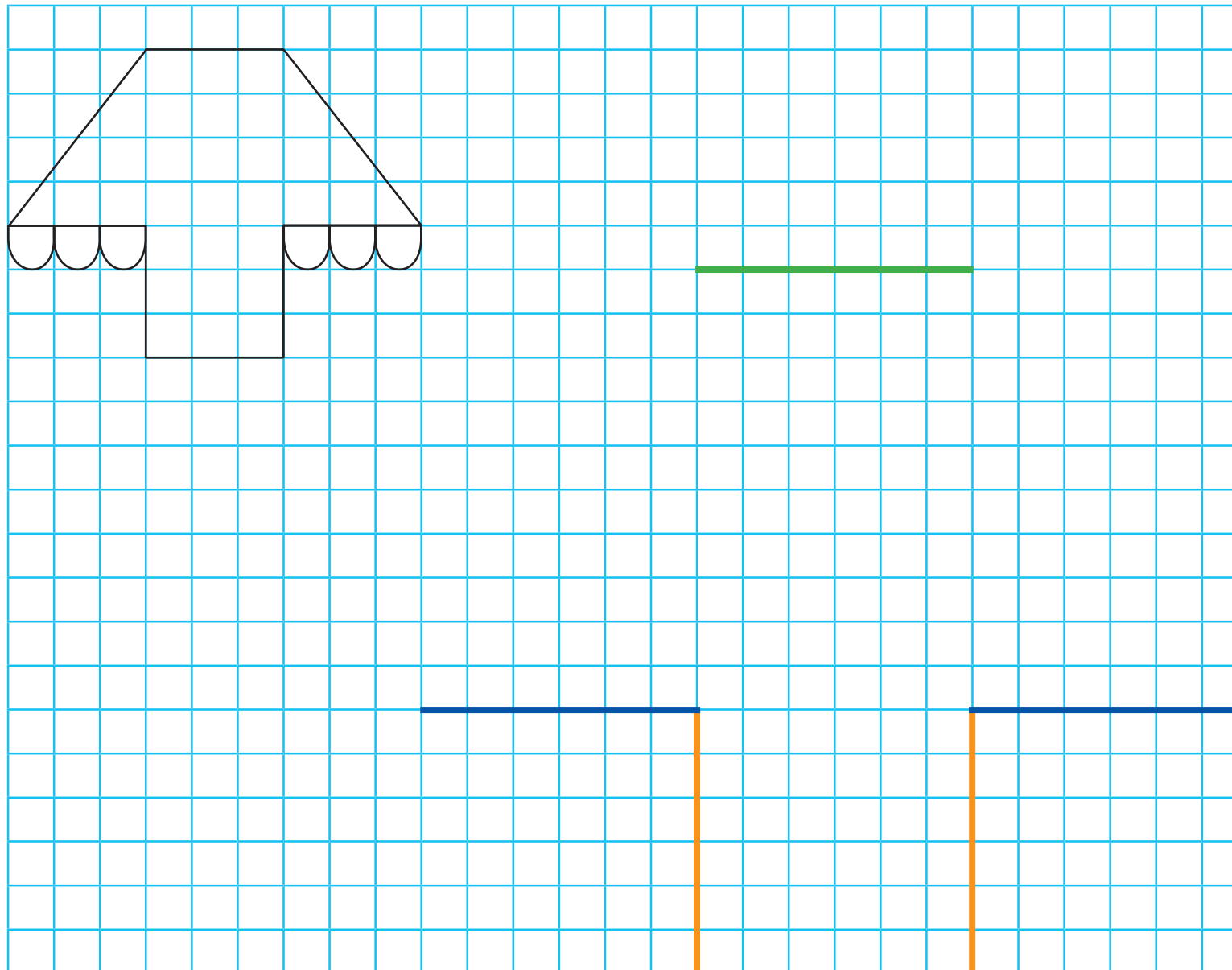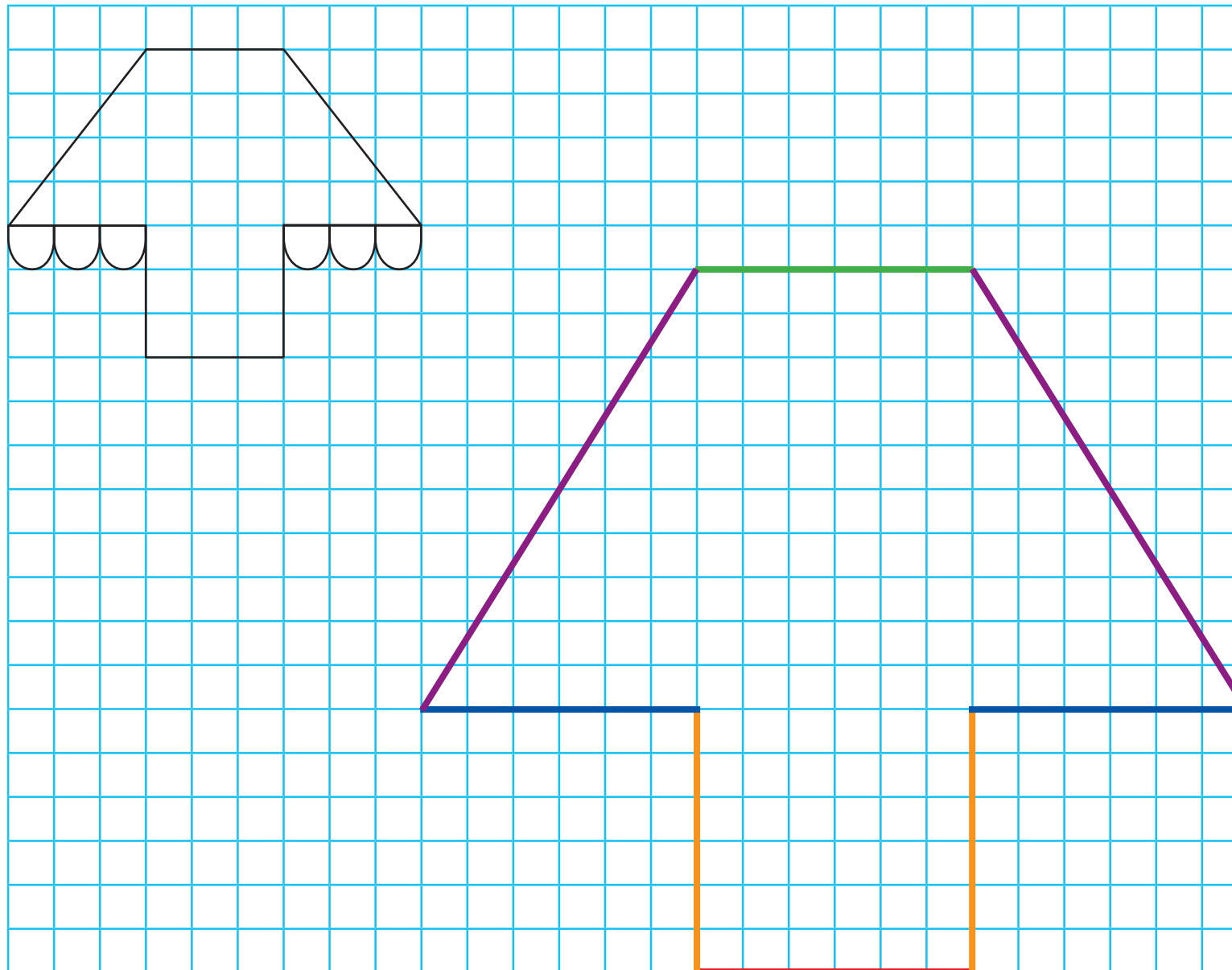
Enlarge this lamp by a scale factor of 2.

HOW I GROW CONTINUED

Enlarge this lamp by a scale factor of 2.

HOW I GROW CONTINUED

Enlarge this lamp by a scale factor of 2.

HOW I GROW CONTINUED

Enlarge this lamp by a scale factor of 2.

HOW I GROW CONTINUED

Enlarge this lamp by a scale factor of 2.