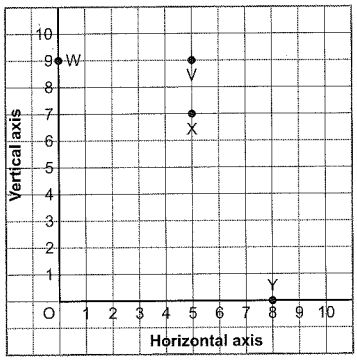
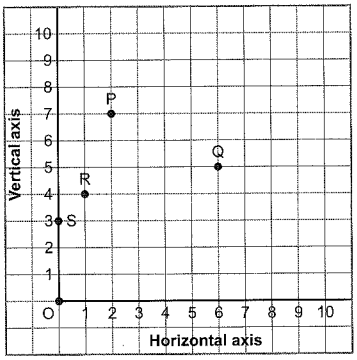
Sample Solutions

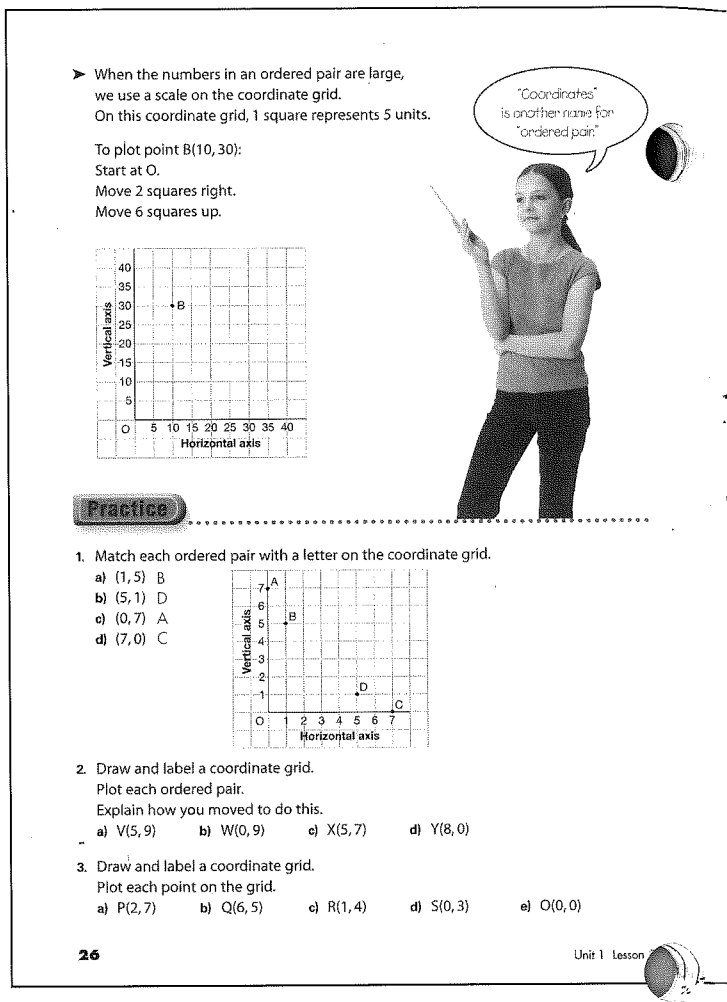
2.



b) I moved 5 squares right and 9 squares up.
c) I moved 0 squares right and 9 squares up.
d) I moved 5 squares right and 7 squares up.
e) I moved 8 squares right and 0 squares up.

3.





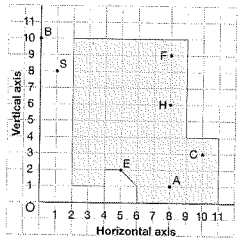
- Does (2, 6) describe the location of the same point as (6, 2)? Explain. *(No; (6, 2) describes a point that is 6 units to the right along the horizontal axis and 2 units up along the vertical axis; (2, 6) describes a point that is 2 units right along the horizontal axis and 6 units up along the vertical axis.)*
- Why do you think these sets of points are called "ordered pairs?"
  (The order of the numbers in the pair is important. The first number always refers to the horizontal distance from the origin, and the second number always refers to the vertical distance from the origin.)
- If I moved 5 units right and 7 units up, what ordered pair would describe my position on the coordinate grid? How do you know?
  ((5, 7); the first number in the ordered pair describes how far you moved to the right, and the second number describes how far you moved up.)
- How would you plot the ordered pair (9, 0)? What about (0, 9)?
  (To plot (9, 0), I would move 9 units to the right and then stay there. I don't have to move any units up. For (0, 9), I don't have to move any distance along the horizontal axis. I just have to move 9 units up.)

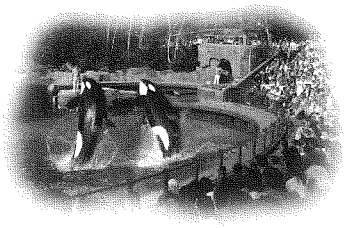
Before students look at the last coordinate grid in *Connect*, ask:

- Why might we need to use a scale on the axes of a coordinate grid?
  (If the numbers in the ordered pairs are very large, and we don't have enough space to plot them, we need to use a scale such as 1 square represents 10 units.)

Have a volunteer read aloud the information about using a scale. Ask:

4. Mr. Kelp's class went to the Vancouver Aquarium. Angel drew this map of the aquarium site.





Write the ordered pair for each place.

a) Amazon Jungle Area: A (8, 1)
b) Beluga Whales: B (0, 10)
c) Carmen the Reptile: C (10, 3)
d) Entrance: E (5, 2)
e) Frogs: F (8, 9)
f) Sea Otters: S (1, 8)
g) Sharks: H (8, 6)

5. Use the map in question 4.

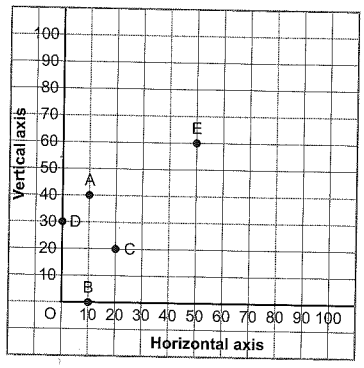
a) To get to the Pacific Canada Pavilion at point P:
You move 1 square left and 3 squares up from the entrance, E.
What are the coordinates of P? (4, 5)

b) To get to the Clam Shell Gift Shop at point G:
You move 5 squares left and 4 squares down from the sharks, H.
What are the coordinates of G? (3, 2)

6. Draw and label a coordinate grid.
Plot each point on the grid.
How did you decide which scale to use on the axes?
a) A(10, 40) b) B(10, 0) c) C(20, 20) d) D(0, 30) e) E(50, 60)

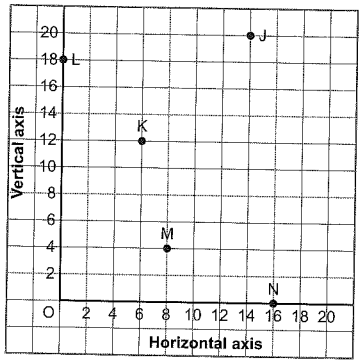
7. Draw and label a coordinate grid.
Plot each point on the grid.
How did you decide which scale to use on the axes?
a) J(14, 20) b) K(6, 12) c) L(0, 18) d) M(8, 4) e) N(16, 0)

6.



The coordinates were all multiples of 10, so I used a scale of 1 square represents 10 units.

7.



The coordinates were all multiples of 2 and since 20 was the greatest coordinate, I used a scale of 1 square represents 2 units.

8. a) For points C, F, and G, the coordinates are listed in the wrong order. The horizontal distance must be the first coordinate and the vertical distance the second coordinate.

- How would you plot the point C(25, 40) on this coordinate grid?
(The scale is 1 square represents 5 units, so I would divide each number in the ordered pair by 5 to get 5 and 8. I would move 5 squares right and 8 squares up.)
- If you moved 7 units right and 2 units up to point D, which ordered pair would describe the point?
(I need to multiply the numbers of units I moved by 5 to get 35 and 10. The ordered pair is D(35, 10).)

Ensure students know what is meant by plotting a point on a grid. Ask:

- What do I mean when I say "Plot the ordered pair A(2, 5) on a coordinate grid"?
(You mean find the location of this ordered pair on the grid, mark a point there, and then label the point with its coordinates. For A(2, 5), I would move 2 units right and 5 units up, mark the point, and label it A(2, 5)).

Practice

Students will need 1-cm grid paper (PM 23) for questions 2, 3, 6, 7, and 9.

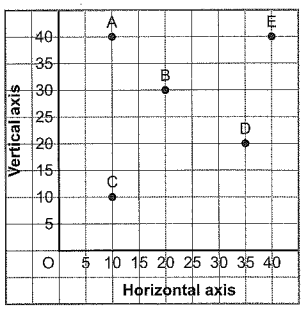
Question 10 generalizes the idea that points on the horizontal axis have coordinates of the form $(x, 0)$ and points on the vertical axis have coordinates of the form $(0, x)$.

Assessment Focus: Question 9

Students should understand that each square on the grid represents 5 units. They should label the lines rather than the spaces on the horizontal and vertical axes. The origin should be labelled O. Points should be described by coordinates that are correctly ordered (horizontal axis, vertical axis). Each coordinate must be 0 or a multiple of 5.

Students can complete the Additional Activity *Mystery Dot-to-Dot* (Master 1.9).

9. A(10, 40), B(20, 30), C(10, 10), D(35, 20), E(40, 40)



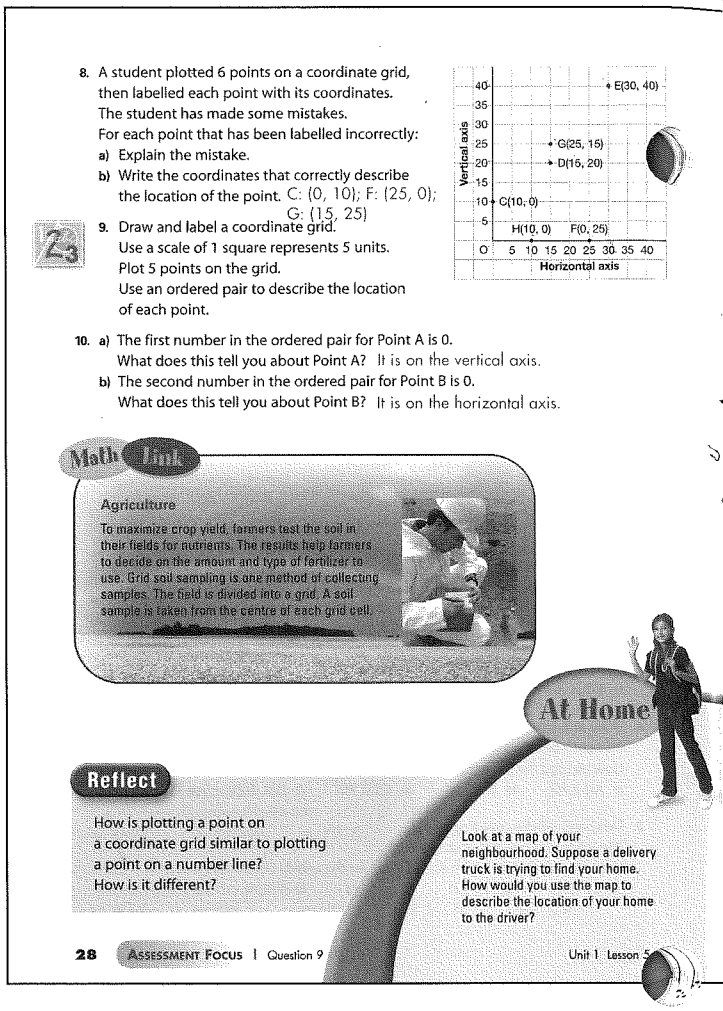
REFLECT: When you are plotting a point on a number line or a coordinate grid, you have to count a certain number of spaces to the right or left. A coordinate grid is different because you also count the spaces up or down. In this way, the vertical axis is like a vertical number line or a thermometer.

Math Link

Have students look up grid soil sampling on the Internet or at the library. Have them make up a problem that is related to the information they found and that involves plotting points on a coordinate grid. Have students trade problems with a partner and solve each other's problems.

At Home

Have students plot their homes on a map on the classroom wall. Have them make up route instructions for a delivery truck to deliver packages to several homes on the route.



8. A student plotted 6 points on a coordinate grid, then labelled each point with its coordinates. The student has made some mistakes. For each point that has been labelled incorrectly:
   a) Explain the mistake.
   b) Write the coordinates that correctly describe the location of the point. C: (0, 10); F: (25, 0); G: (15, 25)

2-3

9. Draw and label a coordinate grid.
   Use a scale of 1 square represents 5 units.
   Plot 5 points on the grid.
   Use an ordered pair to describe the location of each point.

10. a) The first number in the ordered pair for Point A is 0. What does this tell you about Point A? It is on the vertical axis.
    b) The second number in the ordered pair for Point B is 0. What does this tell you about Point B? It is on the horizontal axis.

Math Link

Agriculture

To maximize crop yield, farmers test the soil in their fields for nutrients. The results help farmers to decide on the amount and type of fertilizer to use. Grid soil sampling is one method of collecting samples. The field is divided into a grid. A soil sample is taken from the centre of each grid cell.

At Home

Reflect

How is plotting a point on a coordinate grid similar to plotting a point on a number line? How is it different?

Look at a map of your neighbourhood. Suppose a delivery truck is trying to find your home. How would you use the map to describe the location of your home to the driver?

28 Assessment Focus | Question 9

Unit 1 Lesson 5

ASSESSMENT FOR LEARNING

What to Look For

Conceptual Understanding

✔ Students can use a scale on a grid when the numbers in an ordered pair are large.

Procedural Knowledge

✔ Students can write an ordered pair to describe a point on a coordinate grid.

✔ Students can plot or locate a point on a coordinate grid, given the ordered pair.

What to Do If You Don't See It

Check Further

As students work, ask:

- Is the point (3, 4) in the same location as the point (4, 3)?
- Why are the axes on this grid labelled with multiples of 5?
- How large would the grid need to be if we used a scale of 1 square represents 1 unit?
- How did you decide on the scale for your grid?

Adjust Instruction

Suggest students who are having difficulty choosing a scale find the greatest factor that is common to all the coordinates, then let 1 grid square represent the factor. If students choose an appropriate scale, they should be able to plot all points on a 10×10 grid. Ensure students use the same scale on both axes.