Bronze

1a. A (1, 1); B (1, 3); C (4, 2)

2a. A (1, 2); B (2, 3); C (3, 4)

3a. Vertices plotted from top left clockwise (1, 3) (3, 1) (1, 1)

1b. T

2b. Accept any coordinates that would make a triangle with the given coordinates, for example: (2, 1) (3, 2) (4, 3)

3b. True, the line is horizontal as all the y values are the same. Also (0,4) would be the next point on the left while (4,4) would be the next value on the right.

Silver

4a. A (0, 7); B (3, 5); C (3, 2); D (10, 4); E (6, 8); F (7, 3)

5a. A (5, 5); B (4, 7); C (6, 7); D (7, 5)

6a. Vertices plotted from top left clockwise (1, 7) (8, 7) (8, 3) (1, 3)

4b. S

5b. Accept any coordinates that would make a quadrilateral with the given coordinates, for example: (6, 7) and (8, 7), (6, 1) and (8, 1)

6b. True. If the x value changes, the line will go horizontally. If the y value changes, it will go vertically.

Gold

7a. A (18, 4); B (20, 15); C (0, 0); D (14, 19); E (5, 12); F (10, 8)

8a. A (2, 6); B (9, 7); C (5, 13); D (14, 20); E (12, 17)

9a. Vertices plotted from top left clockwise (12, 14) (17, 10) (15, 4) (9, 4) (7, 10)

7b. H

8b. Accept any coordinates that would make a hexagon with the given coordinates, for example: (6, 4), (16, 16), (6, 16) and (20, 10)

9b. False. The shape can move off the grid as you could draw more squares to make a bigger grid. If you know the scale on the x axis and the y axis, you can work out the new coordinates without drawing more of the grid.

Challenge

1. Ethan is playing a game. He starts at the coordinates (0, 0) and must reach (14, 18). He must make seven different movements and is only allowed to travel vertically and horizontally on the grid lines.
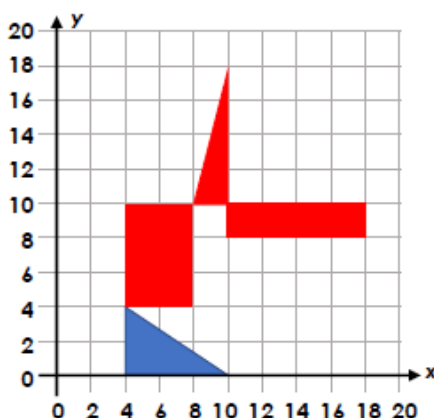
Explore the different routes that would work.
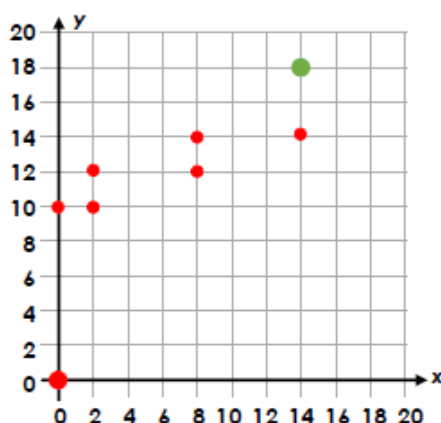
Various possible answers including: (0, 10), (2, 10), (2, 12), (8, 12), (8, 14), (14, 14), (14, 18)

2. Create a quadrilateral that shares a coordinate with the triangle on the grid below. The shapes cannot overlap.

Once complete, repeat the step so that another triangle shares one of the coordinates of the quadrilateral.

Investigate how many times you could repeat this process before you run out of space on the grid.

Various possible answers including: (4, 4), (8, 4), (8, 10), (4, 10)

DF