

Student Name: _____

Website: hourofcode.com/frzn

PUZZLE #1: What did you notice when you pushed the Run button?

PUZZLE #2: How many degrees did you need to turn? _____

PUZZLE #3:

How many 90-degree turns did you need to make to complete the square? _____

PUZZLE #4: How many times did you need to repeat the pattern? _____

The 'repeat' block is similar to repeated addition = multiplication. For example $2+2+2+2 = 8$, which is the same as $2 \times 4 = 8$.

Draw what the blocks would look like if you used repeated addition?

Draw what the blocks would look like if you used multiplication?

PUZZLE #5: How many times did you repeat the pattern? _____

Why did you need to repeat the pattern that many times?

How many degrees did you need to turn? _____

Does it matter if you turn right or left? Explain your thinking...

PUZZLE #6: How many “repeat” commands did you need to use? _____

What did the blocks do that repeated 4 times?

What did the blocks do that repeated 10 times?

PUZZLE #7: Why is it important that Elsa is able to move forward and backward to create this shape?

PUZZLES #8 & 9: Why is each turn in this fractal 36 degrees? (Puzzle 8) Four degrees? (Puzzle 9)

PUZZLE #10: What is the difference between a rectangle / square and this parallelogram?
Review of 3.G.1

Why are the characteristics of a rectangle / square versus a parallelogram important when it comes the angles that the computer needs to draw to make the diamond shape?

Answer Key

Website: hourofcode.com/frzn

PUZZLE #1: What did you notice when you pushed the Run button?

Anna moved forward 100 pixels (steps) and etched (skated) a straight line.

PUZZLE #2: How many degrees did you need to turn? **90-degrees**

PUZZLE #3:

How many 90-degree turns did you need to make to complete the square? **4**

PUZZLE #4: How many times did you need to repeat the pattern? **4**

The 'repeat' block is similar to repeated addition = multiplication. For example $2+2+2+2 = 8$, which is the same as $2 \times 4 = 8$.

<p>Draw what the blocks would look like if you used repeated addition?</p> <p>move forward by 100 pixels turn right by 90 degrees</p> <p style="text-align: center;">+</p> <p>move forward by 100 pixels turn right by 90 degrees</p> <p style="text-align: center;">+</p> <p>move forward by 100 pixels turn right by 90 degrees</p> <p style="text-align: center;">+</p> <p>move forward by 100 pixels turn right by 90 degrees</p>	<p>Draw what the blocks would look like if you used multiplication?</p> <p style="text-align: center;">move forward by 100 pixels turn right by 90 degrees</p> <p style="text-align: center;">x 4</p>
---	---

PUZZLE #5: How many times did you repeat the pattern? **3**

Why did you need to repeat the pattern that many times?

I needed to repeat the pattern that many times because Anna needed to draw a total of three squares.

How many degrees did you need to turn? **120**

Does it matter if you turn right or left? Explain your thinking...

It does not matter if you turn right or left, as Anna will complete all three squares. If you turn left, she will complete the bottom left square, then the bottom right square, and finally the square on the top. If Anna turns right, she will complete the squares in clockwise order (starting from the bottom left square).

PUZZLE #6: How many “repeat” commands did you need to use? **2**

What did the blocks do that repeated 4 times?

The blocks that repeated 4 times drew the square.

What did the blocks do that repeated 10 times?

The clocks that repeated 10 times included drawing the square and then turning 36 degrees.

PUZZLE #7: Why is it important that Elsa is able to move forward and backward to create this shape?

Elsa is drawing a line from the point of origin outward. Since she is not drawing a two dimensional shape, Elsa must move forward and backward to draw a straight line.

PUZZLES #8 & 9: Why is each turn in this fractal 36 degrees? (Puzzle 8) Four degrees? (Puzzle 9)

In puzzle 8, $36 \times 10 = 360$ -degrees and in puzzle 9, $4 \times 90 = 360$ -degrees. In order to complete a full circle, Elsa must travel 360-degrees.

PUZZLE #10: What is the difference between a rectangle / square and this parallelogram?
Review of 3.G.1

A rectangle / square has four 90-degree angles; however, a parallelogram has alternate angles that equal 180 – degrees.

Why are the characteristics of a rectangle / square versus a parallelogram important when it comes the angles that the computer needs to draw to make the diamond shape?

This is important to know in order to help Anna draw the parallelogram. Her first turn and second turn should equal 180-degrees, when added together.