

Linear patterns and functions

Block 2 Student Activity Sheet

Complete these sentences to describe how the one-story tower shown in the animation on page 1 was painted.

- The _____ story tower was painted by painting the _____ and then the _____ sides of the cube.
- The total number of cube faces painted is _____ + _____ = _____.
- Complete this table showing the verbal and numerical representations of the approach to painting the two-story tower shown in the animation on page 3.

Number of stories	Process	Number of cube faces
1	_____ + _____ sides with _____ cube faces per side _____ + _____ • _____	
2	_____ + _____ sides with _____ cube faces per side _____ + _____ • _____	

- Complete this table showing the verbal and numerical representations of the approach to painting the two-story tower shown in the animation on page 5.

Number of stories	Process	Number of cube faces
1	_____ + _____ story with _____ cube faces per story _____ + _____ • _____	
2	_____ + _____ stories with _____ cube faces per story _____ + _____ • _____	

Linear patterns and functions

Block 2 Student Activity Sheet

5. Continue the pattern in the previous table to describe in words and numbers how you would paint a three-story tower, a four-story tower, a five-story tower, and a six-story tower.

Number of stories	Process	Number of cube faces
1	Top + one story with four cube faces per story $1 + 1 \cdot 4$	5
2	Top + two stories with four cube faces per story $1 + 2 \cdot 4$	9
3		
4		
5		
6		





6. Is the relationship between the height of the tower and the number of painted faces a function? Why or why not?

Number of stories in tower	Number of cube faces painted
1	5
2	9
3	13
4	17
5	21
6	25

Linear patterns and functions

Block 2 Student Activity Sheet

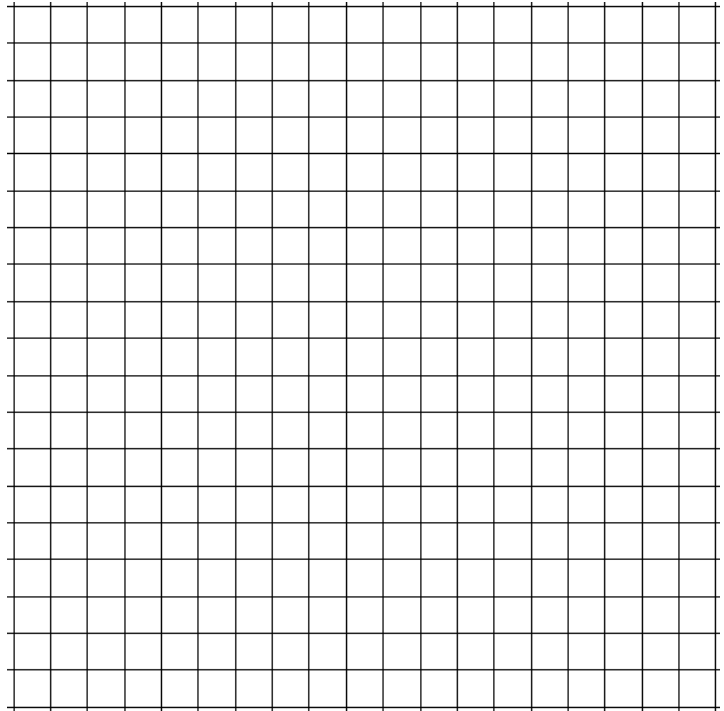
7. **REINFORCE** Complete the table and use the patterns to write a function rule that expresses the relationship between the number of points, p , that divide a segment, and the number of segments formed, s .

	Number of points	Visual form	Written description	Process	Number of segments formed
a.	0				
	1		One point divides a line segments into 2 segments.	$1 + 1$	2
	2		Two points divide a line segments into 3 segments.	$2 + 1$	3
	3		Three points divide a line segment into 4 segments.	$3 + 1$	4
b.	4				
c.	5				
d.	6				
e.	100				

Linear patterns and functions

Block 2 Student Activity Sheet

8. **REINFORCE** Big Star Cinemas sells movie tickets online. For each online order, you must pay a \$2 processing fee. Each ticket is \$10. Create a table and graph to represent the linear data. Is the relationship between the number of movie tickets and the cost a function?



Linear patterns and functions

Block 2 Student Activity Sheet

9. **REINFORCE** Elizabeth throws a ball in the air and records the ball's height over time. Her data are shown in the table.

Time (sec)	Height (ft)
0.0	0
0.5	12
1.0	20
1.5	24
2.0	24
2.5	20
3.0	12
3.5	0

- a. Is the relationship between time and the height of the ball a function? Why or why not?
- b. Is the relationship between time and the height of the ball a linear function? Why or why not?

Linear patterns and functions

Block 2 Student Activity Sheet

10. **REINFORCE** Emmanuel is growing a plant for a science experiment. Each day, he records the height of the plant in centimeters. His data for the first few days are shown in the table.

Time (days)	Height (cm)
0	1.3
1	2.0
2	2.7
3	3.4

a. Extend the table to predict the height of the plant after 7 days.

Time (days)	Height (cm)
0	1.3
1	2.0
2	2.7
3	3.4

b. Is the relationship between the time and the height of the plant a function?

11. **REINFORCE** Write your own example of a function. What is the dependent variable, and what is the independent variable?