11. Pattern Predictor 3

Complete the table to find the pattern.

1.

empty jar	jar with 1 cookie	jar with 2 cookies	jar with 3 cookies
7 oz	9.5 oz	12 oz	14.5 oz
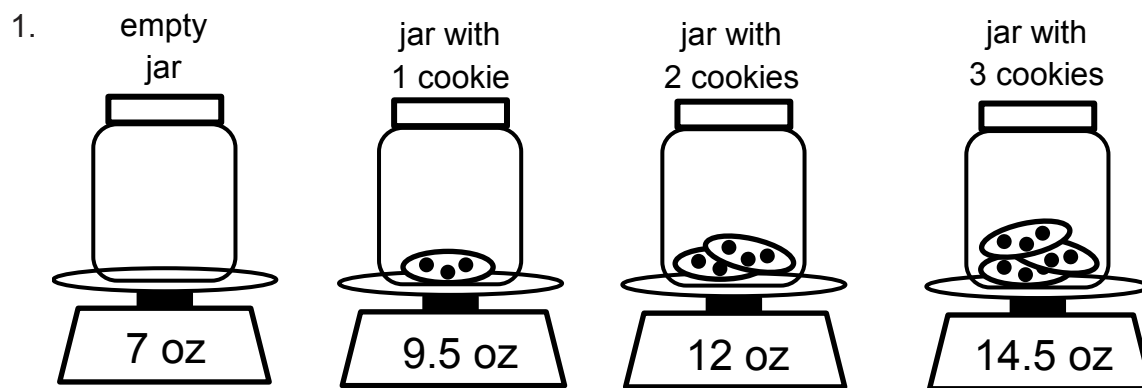
# of cookies	0	1	2	3	4	5	11	20	n
total weight of cookies (oz)	0	2.5	5						
total weight of jar plus cookies (oz)	7	9.5	12						

2.

empty crate	crate with 1 grapefruit	crate with 2 grapefruits	crate with 3 grapefruits
11 oz	15 oz	19 oz	23 oz
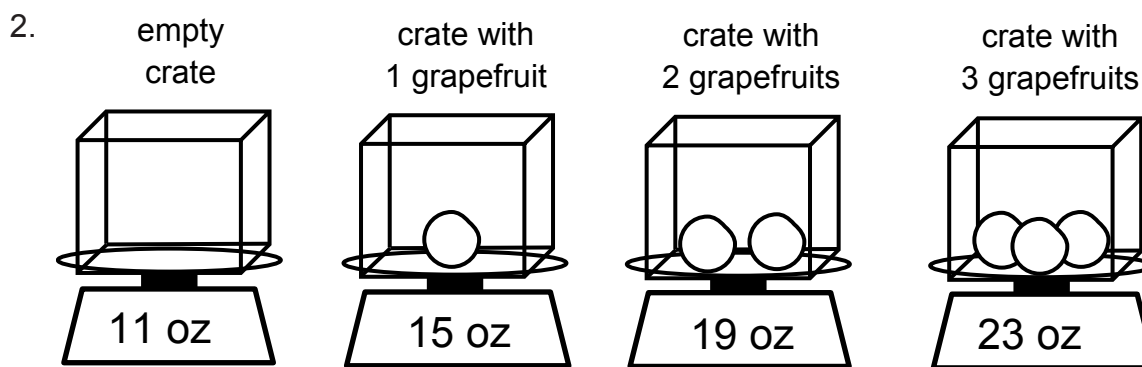
| # of grapefruits	0	1	2	3	4	5	11	20	n
total weight of grapefruits (oz)									
total weight of crate plus grapefruits (oz)									

11. Pattern Predictor 3 (continued)

3.

total weight of box plus chocolates (oz)

# of chocolates in box
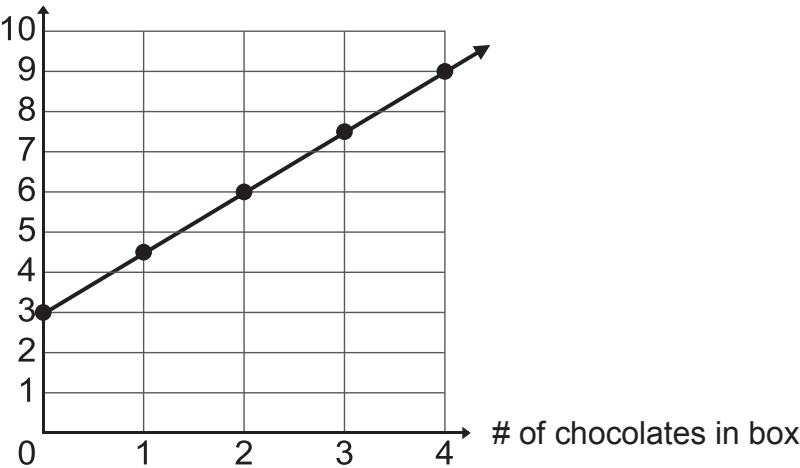
# of chocolates	0	1	2	3	4	5	12	18	n
total weight of chocolates (oz)	0	1.5	3						
total weight of box plus chocolates (oz)	3	4.5	6						

4.

total weight of ice cream plus cone (oz)

# of scoops of ice cream
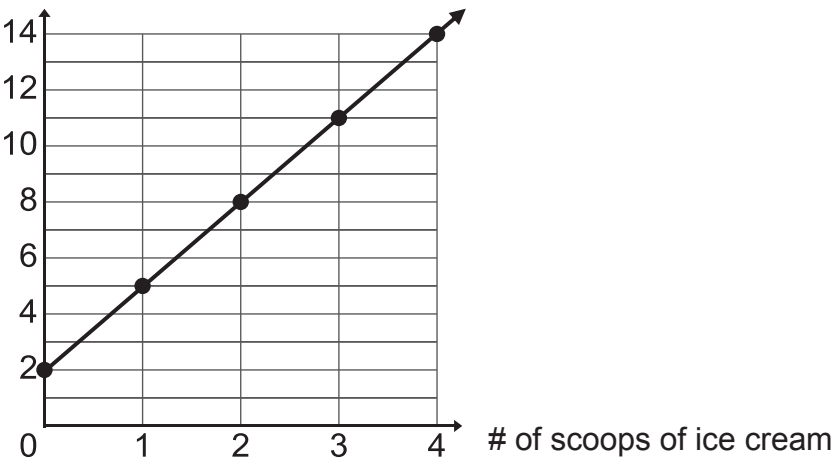
# of scoops	0	1	2	3	4	5	12	18	n
total weight of ice cream (oz)									
total weight of ice cream plus cone (oz)									

Answers

11. Pattern Predictor 3 (p. 13)

1.

# of cookies	0	1	2	3	4	5	11	20	n
total weight of cookies (oz)	0	2.5	5	**7.5**	10	12.5	27.5	50	**2.5n**
total weight of jar plus cookies (oz)	7	9.5	12	**14.5**	17	19.5	34.5	57	**7 + 2.5n**

Every time another cookie is added the total weight increases by 2.5 ounces, which means each cookie weighs 2.5 ounces. So 5 cookies weigh 2.5 • 5 = 12.5 ounces, 11 cookies weigh 2.5 • 11 = 27.5 ounces, 20 cookies weigh 2.5 • 20 = 50 ounces, and n cookies weigh 2.5 • n = 2.5n ounces. The jar adds 7 ounces to the total weight of the cookies: for example, with 20 cookies the total weight of the jar plus cookies is 7 + 50 = 57 ounces. So for n cookies the total weight of the jar plus cookies is 7 + 2.5n ounces (or 2.5n + 7 ounces).

2.

# of grapefruits	0	1	2	3	4	5	11	20	n
total weight of grapefruits (oz)	**0**	**4**	**8**	**12**	**16**	**20**	**44**	**80**	**4n**
total weight of crate plus grapefruits (oz)	**11**	**15**	**19**	**23**	**27**	**31**	**55**	**91**	**11 + 4n**

Every time another grapefruit is added the total weight increases by 4 ounces, which means each grapefruit weighs 4 ounces. So 5 grapefruits weigh 4 • 5 = 20 ounces, 11 grapefruits weigh 4 • 11 = 44 ounces, 20 grapefruits weigh 4 • 20 = 80 ounces, and n grapefruits weigh 4 • n = 4n ounces. The crate adds 11 ounces to the total weight of the grapefruits: for example, with 20 grapefruits the total weight of the crate plus grapefruits is 11 + 80 = 91 ounces. So for n grapefruits the total weight of the crate plus grapefruits is 11 + 4n ounces (or 4n + 11 ounces).

3.

# of chocolates	0	1	2	3	4	5	12	18	n
total weight of chocolates (oz)	0	1.5	3	**4.5**	6	7.5	18	27	**1.5n**
total weight of box plus chocolates (oz)	3	4.5	6	**7.5**	9	10.5	21	30	**3 + 1.5n**

Every time another chocolate is added the total weight increases by 1.5 ounces, which means each chocolate weighs 1.5 ounces. So n chocolates weigh 1.5 • n = 1.5n ounces.