## Student Guide

Operations on a Number Line (SG pp. 284–286)
Questions 1–11

Note: Number sentences may vary. One possible number sentence is given in the answers below.

1. **A.*** Even numbers; multiples of 2

   B. $7 \times 2 = 14$

2. **A.*** Odd numbers

   B. 15

3. The 2 tells that the constant hopper started on 2; the 4 tells that it hopped 4 times; the 3 tells that its hops are all 3 units.

4. **A.** Sam is correct.

   B. Possible response: I multiply 4 hops of 3 units first, $4 \times 3 = 12$, and then I add on 2 because the hopper started at 2 instead of 0.

   C.
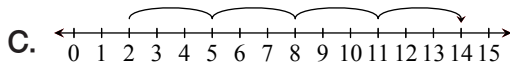
5. **A.** 4

   B. The 10 tells that the constant hopper started on 10; the 2 tells it hopped 2 times; the 3 tells that its hops are all 3 units; the 4 is where the hopper landed.

   C. Professor Peabody multiplies 2×3 first to show the distance the hopper traveled.

   D. Professor Peabody subtracts 6 from 10 to get 4 because the hopper started on 10 and went back 2 hops of -3.

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*Answers and/or discussion are included in the lesson.

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(Student Guide page reproduction:)

✓ **Check-In: Questions 6–11**
Use a number line.

6. A. If a +6 hopper starts on 0 and hops 4 times where will it land?
  B. Write a multiplication number sentence to describe the hopper's trip.

7. A. A hopper starts at 0 and hops 6 times. It lands on 18. What kind of a constant hopper is it?
  B. Show or tell how you know.
  C. Write a number sentence to show the hopper's trip.

8. A. If a +4 hopper starts on 3 and hops 4 times where will it land?
  B. Write a number sentence to describe the hopper's trip.

9. A. Where will a −5 hopper land if it starts at 35 and hops 7 times?
  B. Write a number sentence to describe its trip.

10. A. A hopper starts on 14 and hops 4 times. It lands on 6. What kind of constant hopper is it?
  B. Show or tell how you know.
  C. Write a number sentence to describe the hopper's trip.

11. Rosa writes this number sentence to describe the trip for a +6 hopper:

  2 + 4 × 6 = _____

  Kim thinks the hopper will land on 26 but Mara thinks it will land on 36.

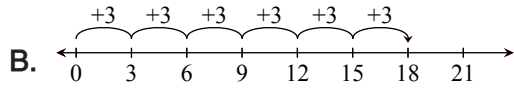 Who do you agree with? Show or tell how you made your decision.

  For more practice with constant hoppers and number sentences, use the *Constant Hoppers and Number Sentences* Homework pages in the *Student Activity Book*.

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Student Activity Book - Page 391

(Student Activity Book page reproduction:)

Name _____ Date _____

Constant Hoppers and Number Sentences
Homework

Use the *Number Line 0–30* page in the Reference section of the *Student Guide* to help you complete each table.

1. A +3 hopper starts at 0.

Number of Hops	Hop Size	Lands On	Number Sentence
1	3		
2	3	6	2 × 3 = 6
3	3		
4	3		
5	3		

2. A +5 hopper starts at 0.

Number of Hops	Hop Size	Lands On	Number Sentence
1	5		
2	5		
3	5		
4	5		
5	5		

3. A constant hopper starts at 0.

Number of Hops	Hop Size	Lands On	Number Sentence
1		4	
2		8	
3		12	
4		16	
5		20	

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6. A. 24
  B. $6 \times 4 = 24$

7. A. +3 hopper
  B.

  C. $3 + 3 + 3 + 3 + 3 + 3 = 18$ or $6 \times 3 = 18$

8. A. 19
  B. $3 + 4 \times 4 = 19$

9. A. 0
  B. $35 - (7 \times 5) = 0$

10. A. −2
  B.
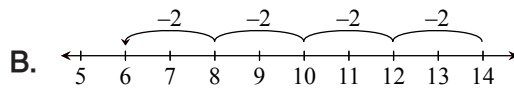
  C. $14 - (4 \times 2) = 6$

11. Kim is correct. Possible response:
  I multiplied 4×6 first to get 24 and then added 2 to make 26.

Student Activity Guide

Constant Hoppers and Number Sentences (SAB pp. 391–392)
Questions 1–7

1. A +3 hopper starting on 0

Number of Hops	Hop Size	Lands On	Number Sentence
1	3	**3**	**1 × 3 = 3**
2	3	6	2 × 3 = 6
3	3	**9**	**3 × 3 = 9**
4	3	**12**	**4 × 3 = 12**
5	3	**15**	**5 × 3 = 15**

2. A +5 constant hopper starting on 0

Number of Hops	Hop Size	Lands On	Number Sentence
1	5	**5**	**1 × 5 = 5**
2	5	**10**	**2 × 5 = 10**
3	5	**15**	**3 × 5 = 15**
4	5	**20**	**4 × 5 = 20**
5	5	**25**	**5 × 5 = 25**

3. A constant hopper starting on 0

Number of Hops	Hop Size	Lands On	Number Sentence
1	**4**	4	**1 × 4 = 4**
2	**4**	8	**2 × 4 = 8**
3	**4**	12	**3 × 4 = 12**
4	**4**	16	**4 × 4 = 16**
5	**4**	20	**5 × 4 = 20**