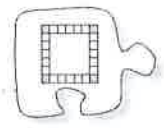


4.1.1 What if I do not know a length?



Introduction to Variables

4-1. CROAKIE THE TALENTED FROG: Croakie is a very talented frog. He does tricks for audiences every year. He not only hops, but he can also do a "hip hop" jump, along with other exciting tricks. Just how long is his "hip hop" jump, assuming he travels the exact same distance each time? Read the description of his special routine below. Then complete parts (a) through (d) that follow.



- Croakie starts at point A. He hops 12 feet to the right, toward point B.
- Then he does two "hip hop" jumps in a row, still traveling to the right.
- He turns and makes a 3-foot hop to the left.
- He stops to regain his balance and then, still traveling to the left, repeats his 3-foot hop three more times.
- He turns and makes 16 spinning hops that are 1 foot each to the right, ending exactly at point B.

Distance:
 $4(3) + 16$

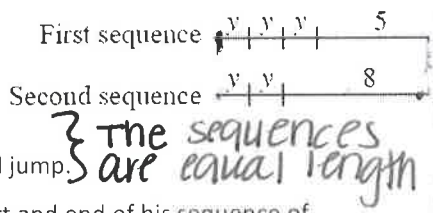
for hip
 $2(3) + 16$
 $+ 16$
 $- 16$

?

explanations
 not depending
 on its visualize

- With your class, draw a diagram to show Croakie's entire routine as described above.
- Work with your team to write an expression that represents the distance from point A to point B based on Croakie's moves.
- Jill is one of Croakie's biggest fans. From watching his act, she estimates that his "hip hop" jumps are each 5 feet long. If Jill is correct, how far is it from point A to point B? Explain.
- Croakie's manager measured the distance from point A to point B and found that it was actually 24 feet. How far does Croakie really travel each time he does his "hip hop" jump? Use pictures to help explain your thinking. Be prepared to share your thinking with the class.

4-2. Now Croakie has a new special jump length. His trainer, Thom, drew the diagram below to represent his two sequences, using y to represent the length of Croakie's new special jump.



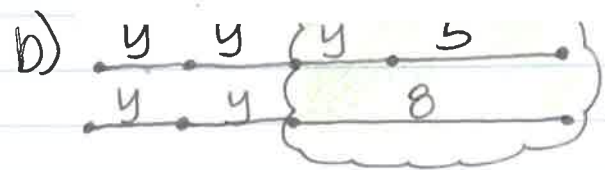
jumps
ht.

1 jumps
ght.

- Describe each of Croakie's two sequences.
- Work with your team to figure out how far Croakie travels in each special jump.
- What is the distance between the start and end of his sequence of jumps?

d)
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 be
 A

4-2

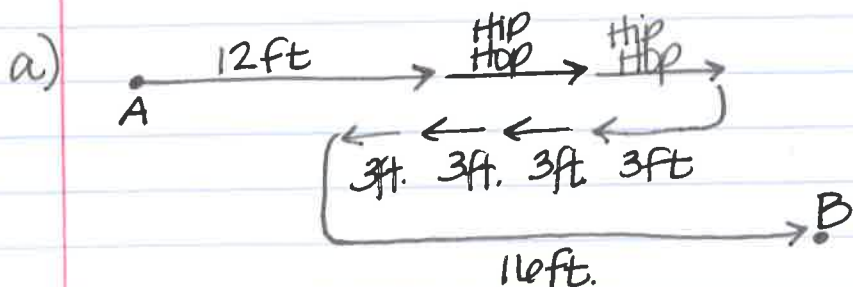


The length of the special jump is 3 units.

c) $3 + 3 + 8 = 14$
 $3 + 3 + 3 + 5 = 14$

The distance is 14 units.

4-1 Class Diagram:



b) Expression:

$$12 + H + H - 4(3) + 11$$

c) Use 5ft for Hip Hop jump:

$$12 + 5 + 5 - 4(3) + 11$$

$$12 + 10 - 12 + 11$$

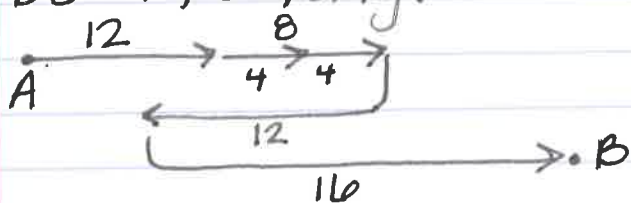
$$22 - 12 + 11$$

$$10 + 11$$

$$\boxed{21\text{ft}}$$

d) The actual distance was only 24ft (two feet less than our original estimate).

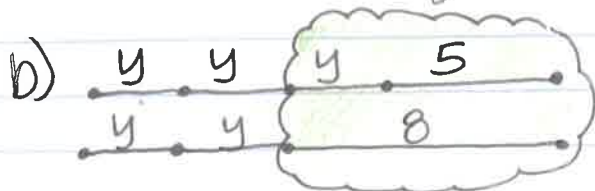
Each hip hop jump must be 4ft long.



Diagrams and explanations will look different depending upon how students visualize the problem.

4-2 a) The first sequence is 3 special jumps to the right then 5ft. to the right.

The second sequence is 2 special jumps to the right then 8ft. to the right.



The length of the special jump is 3 units.

c)

$$3 + 3 + 8 = 14$$

$$3 + 3 + 3 + 5 = 14$$

The distance is 14 units.