

SCAVENGER HUNT



MEASURING SEGMENTS AND SEGMENT ADDITION

Measuring Segments & Segment Addition

Rulers off zero · negative coordinates · pieces and wholes · the cards
check the answers

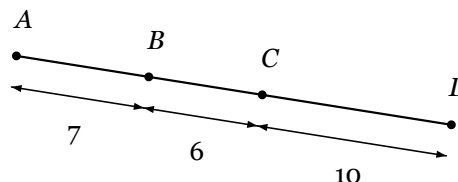
FREE

ANSWER

11

A , B , C and D are on one line, in that order. **Find BD .**

Add your pieces back up. Check that they make the whole.



A

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1. **Tape the 16 cards round the room**, in any order. Send each group to a *different* card. Each card has a large letter in its bottom left corner. **Start each group on one of these eight cards: B L H R K A J F.**
2. **Say this once:** “Write the equation in letters before you put any number in. Circle what the question asks for. Eight right lines bring you back to the start.”
3. **Work out the length. Then find the card with your answer at the top.**

16 cards	pages 3–10, one copy. There are two cards on each sheet. Cut the stack once through the middle.
Record sheet	page 11, one per student. It has three small pictures: points in the order A, B, C, points in the order A, C, B, and a ruler that does not start at 0.
Answers	pages 12–13. They are for you. Do not put them up in the room.

Six kinds of task, each built around a common mistake. Four points on a line (four cards). A ruler that does not start at 0 (one card). An expression for each piece (four cards). A piece from the whole (three cards). Two points on a number line (three cards). Which point is in the middle (one card). The ruler never starts at 0, and the number lines have negative numbers. The cards with expressions ask for a length, never for x .

Eight of the 16 cards make the ring. The other eight are where a wrong answer goes. They look like every other card. Some groups read only the right end of the ruler, add a piece to the whole, stop at x , or drop a minus sign. Their answer is at the top of one of those extra cards. The group does that card, and its answer sends them back to the card they got wrong. A second wrong answer there sends them one card further back, never forward.

Check the length of their row. A clean run is **eight lines**. Every wrong answer adds two more. The line at the bottom of each card is a tip about the card the group has just come from. If a group goes round in circles, do not give the answer. Ask: “What did you write in letters first?”



This is the free lesson this activity came from. The worksheet, the full answers and the lesson plan are on it, at three levels of difficulty.

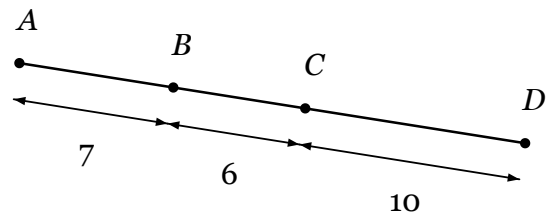
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ANSWER

11

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A

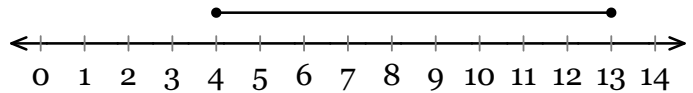
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ANSWER

17

How long is the segment drawn above the ruler?

Write the equation in letters before you put a number in.



B

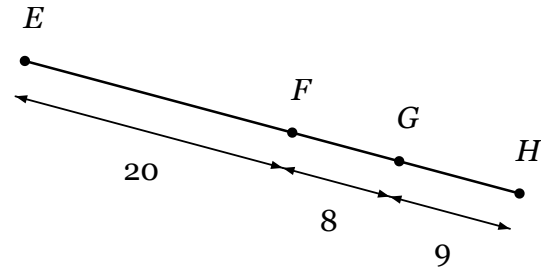
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ANSWER

13

E, F, G and H are on one line, in that order. **Find FH .**

The right-hand reading on a ruler is where a segment ends, not how long it is.



C

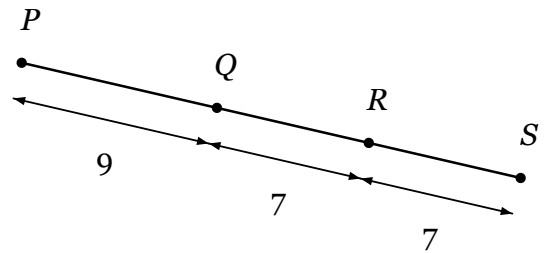
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ANSWER

26

P, Q, R and S are on one line, in that order. **Find PR .**

Subtracting a negative number is adding.



D

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ANSWER

2

R, S and T are on one line, in that order. $RS = x - 4$, $ST = 2x - 10$ and $RT = 25$. **Find RS .**

From a negative point to a positive one, you pass through 0. Count both sides of it.

E

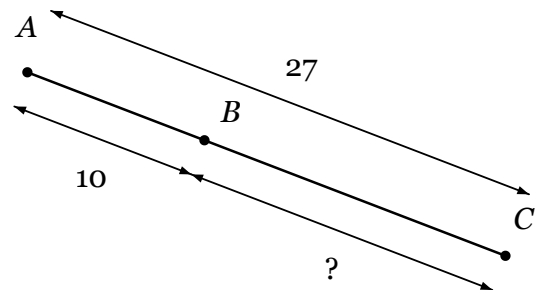
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ANSWER

12

B is between A and C . **Find BC .**

The whole is always the largest of the three numbers.



F

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ANSWER

5

Two points sit on a number line at -7 and 15 . **How far apart are they?**

Finding x is not the last step. Put it back into the length the question asked for.

G

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ANSWER

14

P , Q and R are on one line, in that order. $PR = 30$ and $PQ = 12$. **Find QR .**

Circle what the question asks for before you start.

H

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ANSWER

16

Two points sit on a number line at -19 and -7 . **How far apart are they?**

Imagine sliding the ruler so it starts at 0. Read the length again.

J

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ANSWER

22

X , Y and Z are on one line, in that order. $XY = 2x + 1$, $YZ = x + 4$ and $XZ = 20$. **Find XY .**

In a three-letter name the middle letter is the point in the middle.

K

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ANSWER

9

Two points sit on a number line at -6 and 8 . **How far apart are they?**

A length is never negative. It is never bigger than the whole it is part of.

L

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ANSWER

42

M , N and P are on one line, in that order. $MN = 5x + 4$, $NP = 3x + 1$ and $MP = 21$. **Find MN .**

A piece is never bigger than the whole it is part of.

M

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ANSWER

23

D , E and F are on one line, in that order. $DE = x + 6$, $EF = 3x - 2$ and $DF = 24$. **Find DE .**

Use only the pieces that make up the length you were asked for.

N

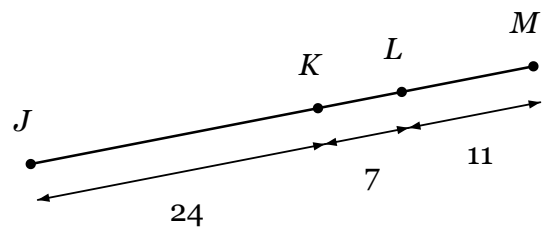
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ANSWER

8

J , K , L and M are on one line, in that order. **Find KM .**

Read the three letters again. The middle one is the point between.



P

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ANSWER

37

U , V and W are on one line, in that order. $UW = 19$ and $UV = 7$. **Find VW .**

The question mark is on a piece. The number above the letters is the whole.

Q

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ANSWER

18

A , C and B are on one line, in that order. $AC = 15$ and $CB = 7$. **Find AB .**

Subtract the other way round. A distance comes out the same.

R

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Scavenger Hunt — where I went

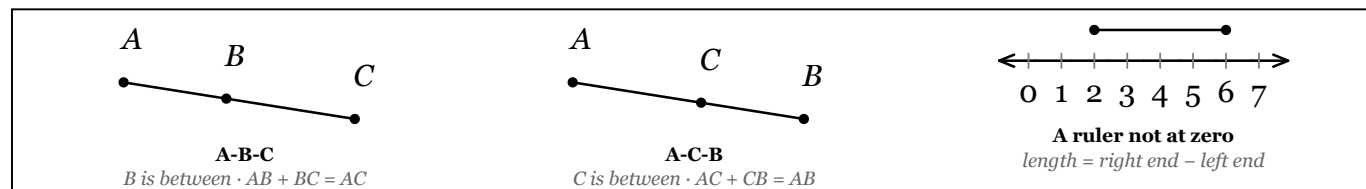
Measuring segments

Name _____

Period _____

Date _____

Work out your card. Fill in one line. Then find the card with your answer at the top. **Write the equation in letters first**, like $AB + BC = AC$, or *right end – left end*. Then put the numbers in. A clean run is eight lines. A longer row means one answer was wrong. **If you are on a card because you went wrong, its foot line says what to check on the card you came from.** If you were right, skip it.



Card letter	The equation, in letters first	My answer
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Point B stood exactly between A and C, and the class checked the lengths. What did they say?

Every number stands for a letter. Write the letter for each answer in the box under that number. Leave the other boxes empty. Then read the boxes you filled across. **If it does not spell three words, one answer was wrong.**

2 = P	5 = U	8 = S	9 = I	11 = T	12 = A	13 = D	14 = D	16 = D	17 = S	18 = U	22 = P	23 = D	26 = A	37 = T	42 = I
2	5	8	9	11	12	13	14	16	17	18	22	23	26	37	42



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Scavenger Hunt — answers

For the teacher

The ring in order. A group may start anywhere on it. Wherever it starts, eight right answers bring it back to that card.

B → L → H → R → K → A → J → F → B

Point B stood exactly between A and C, and the class checked the lengths. What did they say? IT ADDS UP. Read the letters from the smallest answer to the largest. That is the order of the boxes on the record sheet.

The answers on the ring, smallest first: 9 = I, 11 = T, 12 = A, 14 = D, 16 = D, 17 = S, 18 = U, 22 = P. That spells IT ADDS UP.

	Card	The task	Working	Answer	Wrong answer, and the mistake	Letter for its top number
1	B	a ruler that does not start at 0	$13 - 4$	9	13 (read only the right end of the ruler)	S
2	L	two points on a number line	$ -6 - 8 $	14	2 (dropped the minus sign)	I
3	H	a piece from the whole	$30 - 12$	18	42 (added the piece to the whole)	D
4	R	which point is in the middle	$15 + 7$	22	8 (put B in the middle, not C)	U
5	K	an expression for each piece	$x = 5$, then the piece	11	5 (gave x, not the length)	P
6	A	four points on a line	$6 + 10$	16	23 (added all three pieces)	T
7	J	two points on a number line	$ -19 - (-7) $	12	26 (subtracted the negative number wrongly)	D
8	F	a piece from the whole	$27 - 10$	17	37 (added the piece to the whole)	A

Each wrong answer in the table is at the top of a card on the next page. None of these numbers is a slip in arithmetic. Each comes from a common mistake: reading only the right end of the ruler, adding a piece to the whole instead of taking it away, dropping a minus sign, putting the wrong point in the middle, or giving x when a length was asked for.

Scavenger Hunt — the cards off the ring

For the teacher

These eight cards are where a wrong answer goes. The top of each one is the number a group gets by making a mistake at one card of the ring. Its answer is the top of that ring card. So a group that lands here goes back to the card it got wrong, and its row gets two lines longer. **A group cannot reach one of these cards by being right.** A mistake on one of these cards gives the top of the card before it in this list. So a second wrong answer sends a group one card further back, never forward, and never to a dead end.

Card	The task	Working	Answer	Wrong answer, and the mistake	Letter for its top number
C	four points on a line	$8 + 9$	17	37 (added all three pieces)	D
E	an expression for each piece	$x = 13$, then the piece	9	13 (gave x, not the length)	P
M	an expression for each piece	$x = 2$, then the piece	14	2 (gave x, not the length)	I
P	four points on a line	$7 + 11$	18	42 (added all three pieces)	S
G	two points on a number line	$ -7 - 15 $	22	8 (dropped the minus sign)	U
N	an expression for each piece	$x = 5$, then the piece	11	5 (gave x, not the length)	D
D	four points on a line	$9 + 7$	16	23 (added all three pieces)	A
Q	a piece from the whole	$19 - 7$	12	26 (added the piece to the whole)	T

The line at the bottom of every card is a habit to check, not an answer. Every card has one in the same place. On a card off the ring, it names the mistake that sent the group there. Cards with a drawing and cards without one are both on the ring and off it.