

SCAVENGER HUNT



THE TRIANGLE MIDSEGMENT THEOREM

Which Side Is the Midsegment Half Of?

One midsegment on every card · half or double · the cards check the answers

FREE

ANSWER

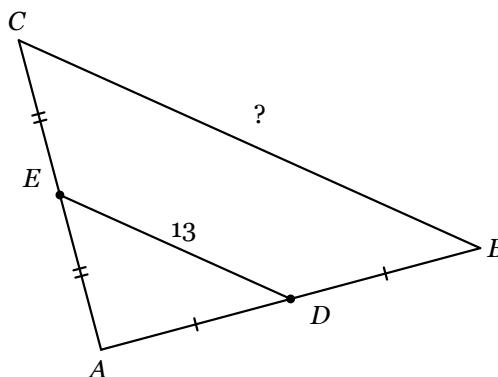
23

D and E are midpoints.

$DE = 13$

How long is BC?

A midsegment is half as long as the side it does not touch.



L

chooseyourlesson.com

1. **Tape the 16 cards around the room**, in any order. Each card has a large letter in its bottom left corner. Start each group at a *different* one of these eight cards: *L B H C F Q D J*.
2. **Say this once:** “A midsegment is half as long as the side it does not touch. Before any arithmetic, write whether the length you know is the long one or the short one. Eight right answers bring you back to your first card.”
3. **Each group finds the length, then walks to the card with that number at the top.** Nothing else is needed.

16 cards	pages 3–10, one copy. There are two cards on each sheet. Cut the whole stack once.
Record sheet	page 11, one per student. It shows a midsegment and the midsegment theorem as two small drawings.
Answers	pages 12–13, for you only. Do not put them up in the room.

Every card shows one triangle with one midsegment. Its two ends are midpoints, marked by ticks. A midsegment is half as long as the one side it does not touch. On two ring cards the midsegment is given and that side is asked, so the student doubles. The most common mistake is to halve instead. On two ring cards that side is given and the midsegment is asked, so the student halves, and the mistake is to double. On the other four, two sides are given and the midsegment is asked. Only the side the midsegment does not touch counts, and the student halves it. The common mistake is to halve a side the midsegment touches.

Eight of the sixteen cards make the ring. A group reaches the other eight only by a wrong answer, but all the cards look the same. On every ring card, the common mistake gives the number at the top of one of the eight other cards. The group does that card, and its answer sends the group back to the card it got wrong. If the group makes the same mistake there, it goes one more card back and still does not reach the ring.

The check is the length of the group's list. A clean run is **eight lines**. Each wrong answer adds two. Every card has a line in small type under the question. It tells a group that arrived by a wrong answer what to check. A group that arrived by a right answer skips it. If a group keeps coming back to the same cards, do not give the answer. Ask: “Put a finger on each end of the midsegment. Which side does it not touch?”



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.
chooseyourlesson.com — 135 free geometry lessons.

ANSWER

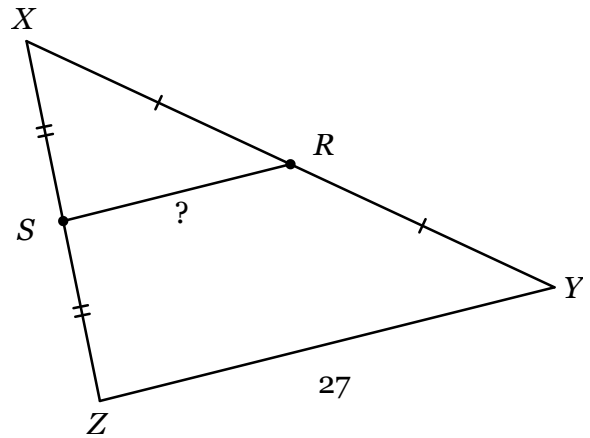
17

R and S are midpoints.

$$YZ = 27$$

How long is RS?

Check your answer. Twice the midsegment makes the partner side.



A

chooseyourlesson.com

ANSWER

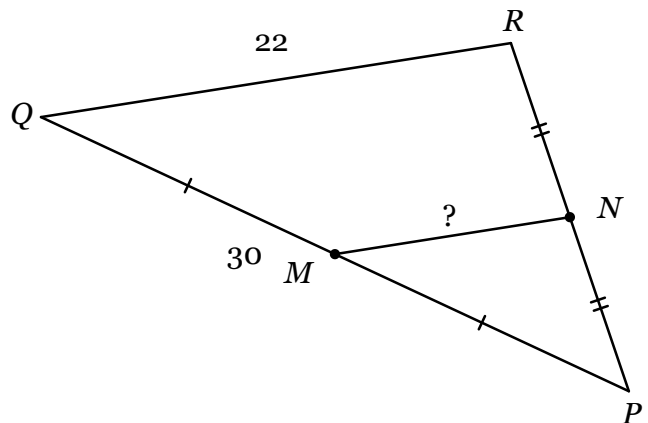
26

M and N are midpoints.

$$PQ = 30 \text{ and } QR = 22$$

How long is MN?

Which side does the midsegment not touch? That side is its partner.



B

chooseyourlesson.com

ANSWER

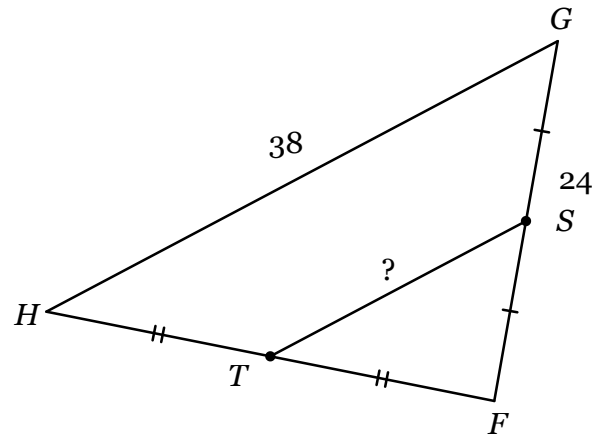
18.5

S and T are midpoints.

$GH = 38$ and $FG = 24$

How long is ST?

The side is the long one. The midsegment is the short one.



C

chooseyourlesson.com

ANSWER

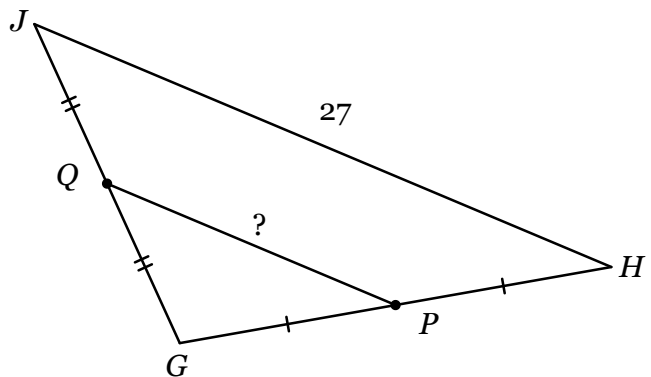
14.5

P and Q are midpoints.

$HJ = 27$

How long is PQ?

A midsegment and its partner side never meet.



D

chooseyourlesson.com

ANSWER

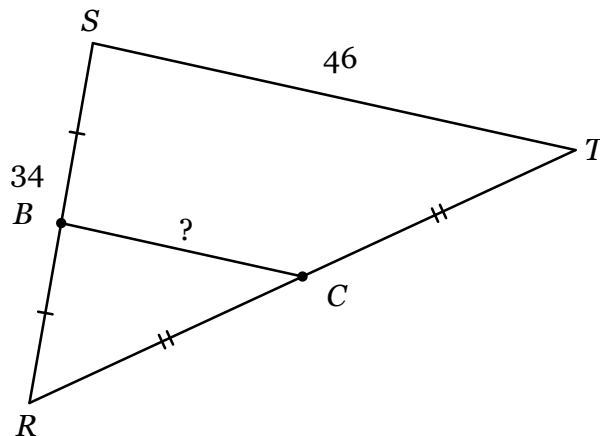
6.5

B and C are midpoints.

$RS = 34$ and $ST = 46$

How long is BC?

A side that the midsegment touches is not its partner.



E

chooseyourlesson.com

ANSWER

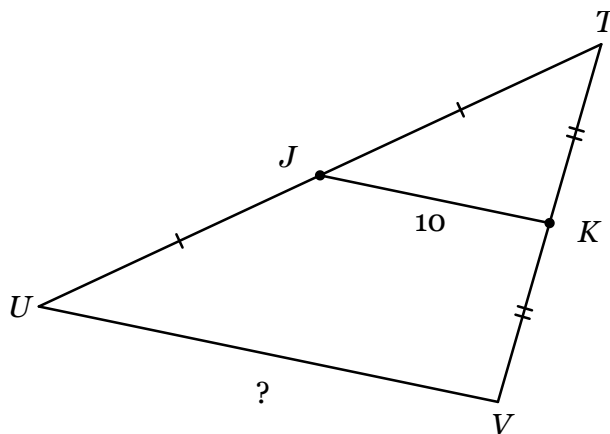
19

J and K are midpoints.

$JK = 10$

How long is UV?

From a midsegment to its partner side, the number grows.



F

chooseyourlesson.com

ANSWER

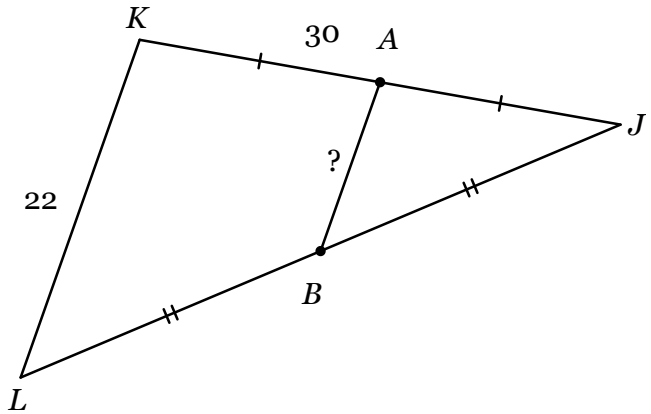
74

A and B are midpoints.

$KL = 22$ and $JK = 30$

How long is AB?

Two ends of a midsegment sit on two sides. The third side is its partner.



G

chooseyourlesson.com

ANSWER

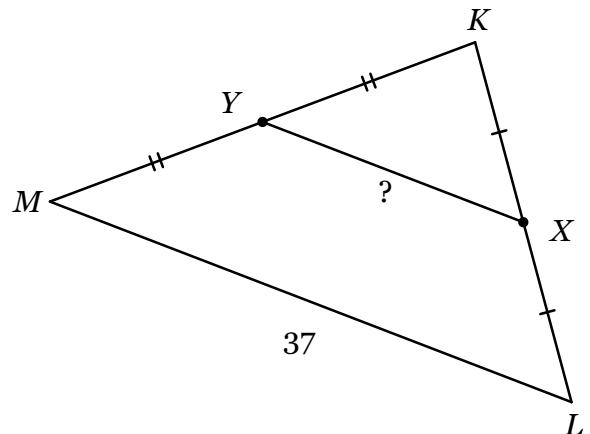
11

X and Y are midpoints.

$LM = 37$

How long is XY?

Before any arithmetic, say which length is long and which is short.



H

chooseyourlesson.com

ANSWER

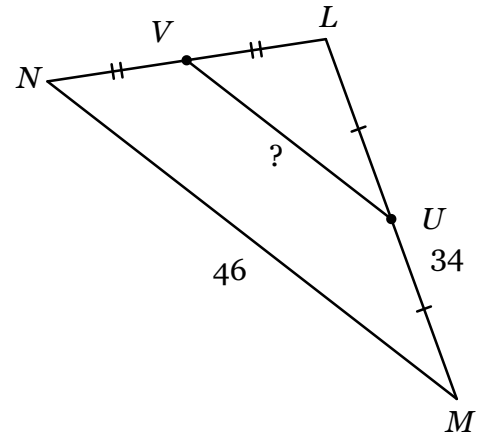
13.5

U and V are midpoints.

$MN = 46$ and $LM = 34$

How long is UV?

Is your midsegment shorter than its partner side? It has to be.



J

chooseyourlesson.com

ANSWER

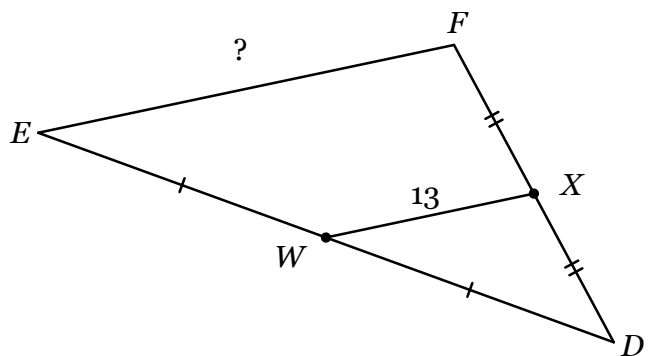
15

W and X are midpoints.

$WX = 13$

How long is EF?

Given the midsegment, find the side? The answer is bigger than the number.



K

chooseyourlesson.com

ANSWER

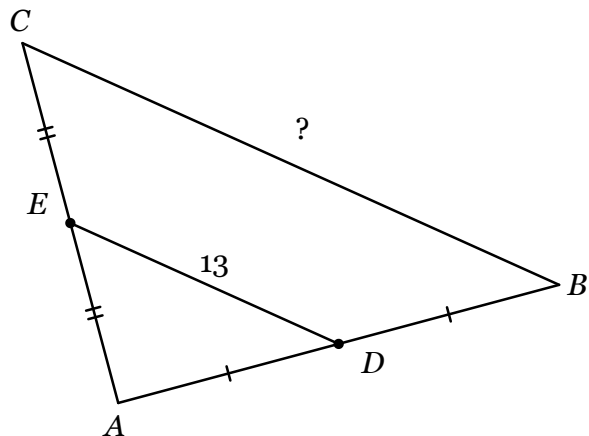
23

D and E are midpoints.

$$DE = 13$$

How long is BC?

A midsegment is half as long as the side it does not touch.



L

chooseyourlesson.com

ANSWER

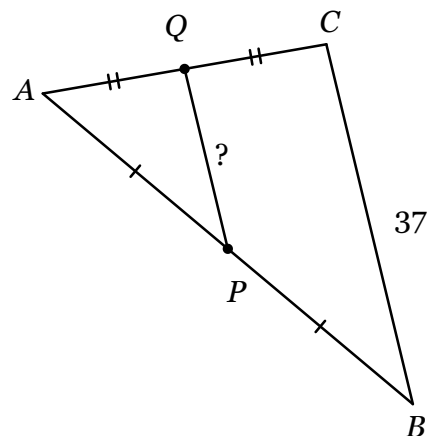
12

P and Q are midpoints.

$$BC = 37$$

How long is PQ?

Halve only when the length you know is the side.



M

chooseyourlesson.com

ANSWER

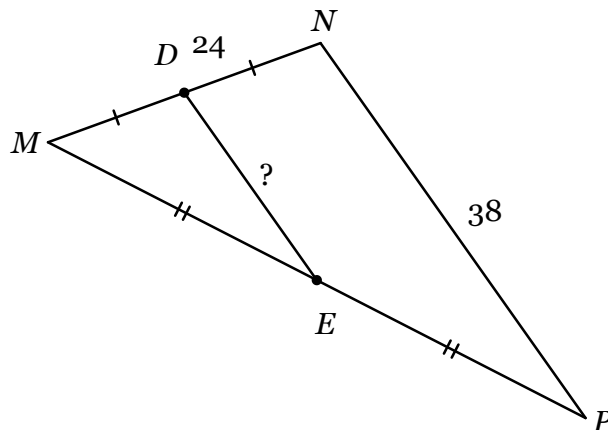
5

D and E are midpoints.

$MN = 24$ and $NP = 38$

How long is DE?

Which side runs beside the midsegment and never meets it?



N

chooseyourlesson.com

ANSWER

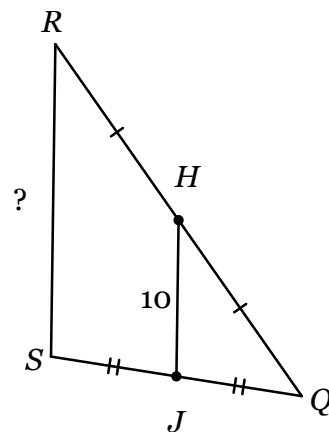
18

H and J are midpoints.

$HJ = 10$

How long is RS?

Is the length you know the long one or the short one?



P

chooseyourlesson.com

ANSWER

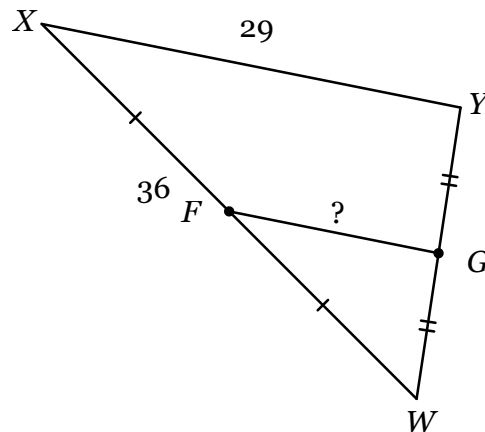
20

F and G are midpoints.

$WX = 36$ and $XY = 29$

How long is FG?

Put a finger on each end of the midsegment. Which sides hold those ends?



chooseyourlesson.com

Q

ANSWER

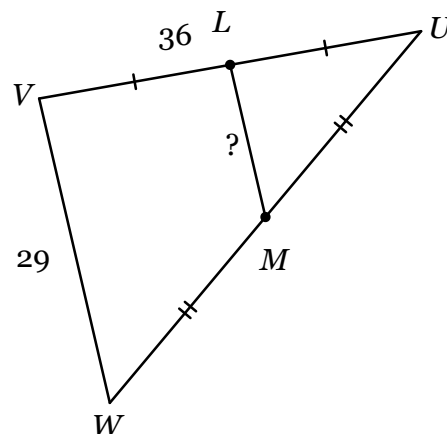
54

L and M are midpoints.

$VW = 29$ and $UV = 36$

How long is LM?

Twice the midsegment gives its partner side. Half the side gives the midsegment.



chooseyourlesson.com

R

Scavenger Hunt — where I went

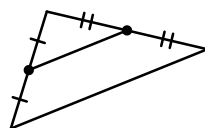
The midsegment theorem

Name _____

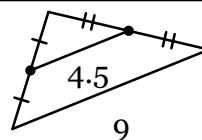
Period _____

Date _____

Do the card you are at. Fill in one line. Then find the card with your answer at the top. **Before any arithmetic, write “long” if the length you know is the side, or “short” if it is the midsegment.** A clean run is eight lines. Each card has a line in small type under the question. **If you are on a card because you went wrong, its line says what to check. If you were right, skip it.**



A **midsegment** joins the midpoints of two sides.



It is parallel to the side it does not touch, and **half** as long.

Card letter	The length I know is (long or short)	My answer
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

What does a midsegment call the side it does not touch?

Every number stands for a letter. Write the letter for each of your answers in the box above that number. Leave the other boxes empty. Then read the boxes you filled, left to right. **If they do not spell a word, one answer is wrong.**

5 = Y 6.5 = M 11 = M 12 = O 13.5 = Y 14.5 = D 15 = D 17 = L 18 = E 18.5 = O 19 = U 20 = B 23 = L 26 = E
54 = U 74 = B

5	6.5	11	12	13.5	14.5	15	17	18	18.5	19	20	23	26	54	74	



135 free geometry lessons — worksheets, worked answers and lesson plans.
chooseyourlesson.com

Scavenger Hunt — answers

For the teacher

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

L → B → H → C → F → Q → D → J → L

What does a midsegment call the side it does not touch? The answer is *MY DOUBLE*. The ring's answers, in the order of the boxes on the record sheet (smallest number first), with their letters: **11 M • 13.5 Y • 14.5 D • 18.5 O • 19 U • 20 B • 23 L • 26 E**.

	Card	Given and asked	Answer, and why	Wrong answer from the common mistake	Joke letter for the number at its top
1	L	DE = 13, find BC	26 . DE does not touch BC, so BC is twice DE: $2 \times 13 = 26$.	6.5, from halving DE instead of doubling it	L
2	B	QR = 22, PQ = 30, find MN	11 . MN does not touch QR, so MN is half of QR: $22 \div 2 = 11$. PQ touches MN, so it is not used.	15, from halving PQ, a side the midsegment touches	E
3	H	LM = 37, find XY	18.5 . XY does not touch LM, so XY is half of LM: $37 \div 2 = 18.5$.	74, from doubling LM instead of halving it	M
4	C	GH = 38, FG = 24, find ST	19 . ST does not touch GH, so ST is half of GH: $38 \div 2 = 19$. FG touches ST, so it is not used.	12, from halving FG, a side the midsegment touches	O
5	F	JK = 10, find UV	20 . JK does not touch UV, so UV is twice JK: $2 \times 10 = 20$.	5, from halving JK instead of doubling it	U
6	Q	XY = 29, WX = 36, find FG	14.5 . FG does not touch XY, so FG is half of XY: $29 \div 2 = 14.5$. WX touches FG, so it is not used.	18, from halving WX, a side the midsegment touches	B
7	D	HJ = 27, find PQ	13.5 . PQ does not touch HJ, so PQ is half of HJ: $27 \div 2 = 13.5$.	54, from doubling HJ instead of halving it	D
8	J	MN = 46, LM = 34, find UV	23 . UV does not touch MN, so UV is half of MN: $46 \div 2 = 23$. LM touches UV, so it is not used.	17, from halving LM, a side the midsegment touches	Y

Each wrong answer in the table is the number at the top of a card off the ring. Those cards are on the next page.

Scavenger Hunt — the cards off the ring

For the teacher

A group reaches these eight cards only by a wrong answer. The number at the top of each one is the wrong answer from one ring card. Its right answer is the number at the top of that ring card, so the group goes back to the card it got wrong. If the group makes the same mistake again, it goes to another card off the ring. So a second wrong answer never moves a group forward.

Card	Given and asked	Answer, and why	Wrong answer from the common mistake	Joke letter for the number at its top
E	ST = 46, RS = 34, find BC	23. BC does not touch ST, so BC is half of ST: $46 \div 2 = 23$. RS touches BC, so it is not used.	17, from halving RS, a side the midsegment touches	M
K	WX = 13, find EF	26. WX does not touch EF, so EF is twice WX: $2 \times 13 = 26$.	6.5, from halving WX instead of doubling it	D
G	KL = 22, JK = 30, find AB	11. AB does not touch KL, so AB is half of KL: $22 \div 2 = 11$. JK touches AB, so it is not used.	15, from halving JK, a side the midsegment touches	B
M	BC = 37, find PQ	18.5. PQ does not touch BC, so PQ is half of BC: $37 \div 2 = 18.5$.	74, from doubling BC instead of halving it	O
N	NP = 38, MN = 24, find DE	19. DE does not touch NP, so DE is half of NP: $38 \div 2 = 19$. MN touches DE, so it is not used.	12, from halving MN, a side the midsegment touches	Y
P	HJ = 10, find RS	20. HJ does not touch RS, so RS is twice HJ: $2 \times 10 = 20$.	5, from halving HJ instead of doubling it	E
R	VW = 29, UV = 36, find LM	14.5. LM does not touch VW, so LM is half of VW: $29 \div 2 = 14.5$. UV touches LM, so it is not used.	18, from halving UV, a side the midsegment touches	U
A	YZ = 27, find RS	13.5. RS does not touch YZ, so RS is half of YZ: $27 \div 2 = 13.5$.	54, from doubling YZ instead of halving it	L

Other mistakes lead to no card at all. A group might copy the midsegment's length as the side, or take the side without halving it, or double it. Its answer is then not the number at the top of any card, and the group knows to check its work.

Guessing does not work. Every simple rule that uses only the printed numbers, such as always halving the larger number, answers at most eight of the sixteen cards correctly.