

ANSWER MAZE



SIMILAR TRIANGLES: CORRESPONDING ANGLES AND SIDES

Which Way Up? Which Letter Goes
Where?

One page · 10–15 minutes · nothing to prepare

FREE

3

$\triangle ABC \sim \triangle DEF$

AB = 4 and BC = 6, and DE = 8. How long is EF?

EF = 3 → **go to box 2**

EF = 12 → **go to box 6**

Hint: Look at DE and its partner. Which of the two triangles is larger?

6

$\triangle ABC \sim \triangle DFE$

AB = 6 and AC = 8, and DE = 12. How long is DF?

DF = 9 → **go to box 1**

DF = 16 → **go to box 5**

Hint: Stack the two names. Which letters of $\triangle ABC$ go with D and with E?

1. **Hand out page 3**, one per student. Nothing else is needed.
2. **Say this once:** *“Start at box 3. Write the two names one above the other to find the partners. Find the scale factor, then use it. Write every box number in the row at the bottom as you go.”*
3. **Check a sheet quickly.** A student with no mistakes writes **3 6 1 8 4 7**: six boxes, then out.

Student sheet	page 3, one per student. No box has a drawing. A box at the top shows how a similarity statement pairs the letters.
Answers	page 4.

Every wrong answer comes from one of two mistakes. The first is using the scale factor the wrong way round. A student divides when the asked side is in the larger triangle, or multiplies when it is in the smaller one, or turns a ratio upside down. These wrong answers send the student to box 2.

The second mistake is pairing the letters in ABC order. In $\triangle ABC \sim \triangle DFE$, the statement pairs B with F and C with E. A student who pairs them in ABC order matches B with E instead. Every proportion after that is wrong, but it looks correct. These wrong answers send the student to box 5. Boxes 2 and 5 ask the same kind of question again, and both of their answers lead back to the route.

The row at the bottom is the check. A clean run is six numbers. Each wrong answer adds at least one more. Guessing does not get a student out: every simple guessing rule, such as always taking the larger number, goes wrong within the first two boxes.



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 Maze — similar triangles

Start at box 3

Name _____

Period _____

Date _____

Start at box 3. Read the statement and the question. Pick one answer and go to the box it names. Write each box number in the row at the bottom as you go.

$\triangle ABC \sim \triangle DEF$. Write the two names one above the other.

$\triangle$	A	B	C
$\triangle$	D	E	F

Letters in the same column are partners. Equal angles: $\angle A = \angle D$, $\angle B = \angle E$, $\angle C = \angle F$. AB goes with DE.

1 $\triangle PQR \sim \triangle XYZ$
 $PQ = 12$ and $QR = 9$, and $XY = 4$. How long is YZ ?
 $YZ = 27 \rightarrow$ **go to box 2**
 $YZ = 3 \rightarrow$ **go to box 8**
Hint: Is $\triangle XYZ$ larger or smaller than $\triangle PQR$? Check the pair of partners first.

2 $\triangle GHJ \sim \triangle KLM$
 $GH = 10$ and $HJ = 6$, and $KL = 15$. How long is LM ?
 $LM = 9 \rightarrow$ **go to box 6**
 $LM = 4 \rightarrow$ **go to box 3**
Hint: Look at KL and its partner. Which of the two triangles is larger?

3 $\triangle ABC \sim \triangle DEF$
 $AB = 4$ and $BC = 6$, and $DE = 8$. How long is EF ?
 $EF = 3 \rightarrow$ **go to box 2**
 $EF = 12 \rightarrow$ **go to box 6**
Hint: Look at DE and its partner. Which of the two triangles is larger?

4 $\triangle ABC \sim \triangle DEF$
In $\triangle ABC$, $AB = 20$ and $BC = 8$. What is $DE \div EF$?
 $DE \div EF = 0.4 \rightarrow$ **go to box 2**
 $DE \div EF = 2.5 \rightarrow$ **go to box 7**
Hint: Which side of $\triangle ABC$ goes with DE , and which goes with EF ? Keep the order.

5 $\triangle DEF \sim \triangle GJH$
 $DE = 5$ and $DF = 10$, and $GH = 20$. How long is GJ ?
 $GJ = 40 \rightarrow$ **go to box 6**
 $GJ = 10 \rightarrow$ **go to box 1**
Hint: Read the statement in order. Which letters of $\triangle DEF$ go with G and with J ?

6 $\triangle ABC \sim \triangle DFE$
 $AB = 6$ and $AC = 8$, and $DE = 12$. How long is DF ?
 $DF = 9 \rightarrow$ **go to box 1**
 $DF = 16 \rightarrow$ **go to box 5**
Hint: Stack the two names. Which letters of $\triangle ABC$ go with D and with E ?

7 $\triangle RST \sim \triangle UWV$
 $RS = 10$ and $RT = 15$, and $UV = 6$. How long is UW ?
 $UW = 4 \rightarrow$ **you are out**
 $UW = 9 \rightarrow$ **go to box 5**
Hint: Stack the two names. Which letters of $\triangle RST$ go with U and with W ?

8 $\triangle JKL \sim \triangle NMP$
 $JL = 4$ and $KL = 8$, and $NP = 12$. How long is MP ?
 $MP = 24 \rightarrow$ **go to box 4**
 $MP = 6 \rightarrow$ **go to box 5**
Hint: Read the statement in order. Which letter of $\triangle JKL$ goes with M ?

Write every box number here, in order.

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The route, in order. Boxes 2 and 5 are not on it. A student reaches them only by a wrong answer. They are the last two rows of the table.

3 → 6 → 1 → 8 → 4 → 7 → out

	The box's question	Right answer, and why	Wrong answer, and why a student picks it
1	Box 3 $\triangle ABC \sim \triangle DEF$. $AB = 4$ and $BC = 6$, and $DE = 8$. How long is EF ?	EF = 12. DE goes with AB , so the scale factor is $8 \div 4 = 2$. EF goes with BC , so $EF = 6 \times 2 = 12$.	"EF = 3" goes to box 2. A student who divides by the scale factor instead of multiplying picks this.
2	Box 6 $\triangle ABC \sim \triangle DFE$. $AB = 6$ and $AC = 8$, and $DE = 12$. How long is DF ?	DF = 9. DE goes with AC , so the scale factor is $12 \div 8 = 1.5$. DF goes with AB , so $DF = 6 \times 1.5 = 9$.	"DF = 16" goes to box 5. A student who pairs the letters in ABC order ($\triangle ABC \sim \triangle DEF$) uses AB and AC and picks this.
3	Box 1 $\triangle PQR \sim \triangle XYZ$. $PQ = 12$ and $QR = 9$, and $XY = 4$. How long is YZ ?	YZ = 3. XY goes with PQ , so the scale factor is $4 \div 12 = 1/3$. YZ goes with QR , so $YZ = 9 \times 1/3 = 3$.	"YZ = 27" goes to box 2. A student who divides by the scale factor instead of multiplying picks this.
4	Box 8 $\triangle JKL \sim \triangle NMP$. $JL = 4$ and $KL = 8$, and $NP = 12$. How long is MP ?	MP = 24. NP goes with JL , so the scale factor is $12 \div 4 = 3$. MP goes with KL , so $MP = 8 \times 3 = 24$.	"MP = 6" goes to box 5. A student who pairs the letters in ABC order ($\triangle JKL \sim \triangle MNP$) uses KL and JL and picks this.
5	Box 4 $\triangle ABC \sim \triangle DEF$. In $\triangle ABC$, $AB = 20$ and $BC = 8$. What is $DE \div EF$?	$DE \div EF = 2.5$. DE goes with AB and EF goes with BC . The two triangles have the same shape, so $DE/EF = AB/BC = 20 \div 8 = 2.5$.	" $DE \div EF = 0.4$ " goes to box 2. A student who turns the fraction upside down picks this.
6	Box 7 $\triangle RST \sim \triangle UVW$. $RS = 10$ and $RT = 15$, and $UV = 6$. How long is UW ?	UW = 4. UV goes with RT , so the scale factor is $6 \div 15 = 0.4$. UW goes with RS , so $UW = 10 \times 0.4 = 4$.	"UW = 9" goes to box 5. A student who pairs the letters in ABC order ($\triangle RST \sim \triangle UVW$) uses RS and RT and picks this.
	Box 2 $\triangle GHJ \sim \triangle KLM$. $GH = 10$ and $HJ = 6$, and $KL = 15$. How long is LM ?	LM = 9. KL goes with GH , so the scale factor is $15 \div 10 = 1.5$. LM goes with HJ , so $LM = 6 \times 1.5 = 9$.	"LM = 4" goes to box 3. A student who divides by the scale factor instead of multiplying picks this.
	Box 5 $\triangle DEF \sim \triangle GJH$. $DE = 5$ and $DF = 10$, and $GH = 20$. How long is GJ ?	GJ = 10. GH goes with DF , so the scale factor is $20 \div 10 = 2$. GJ goes with DE , so $GJ = 5 \times 2 = 10$.	"GJ = 40" goes to box 6. A student who pairs the letters in ABC order ($\triangle DEF \sim \triangle GHJ$) uses DE and DF and picks this.

How to check any box. Write the two names of the statement one above the other. Letters in the same column are partners. Divide a side of the second triangle by its partner to get the scale factor. Then multiply the partner of the side you want by it. A side of the larger triangle must come out longer than its partner.

A student can find the last four boxes of the route by following the arrows backward from "you are out." So ask a student with a clean row to explain one box.