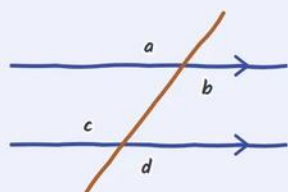


two values in the whole picture, and a ratio that never changes

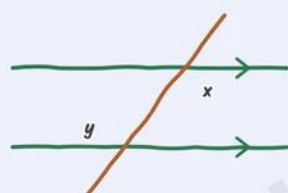
Two parallel lines cut by one transversal

*

- the chevrons are the notation for parallel. Without them, or without the question saying so, nothing below is allowed
- eight angles appear, but only two different values: some angle x , and its supplement $180-x$. Four angles take each value
- equal to each other are the vertically opposite pair at one crossing, the corresponding pair (same position at both crossings) and the alternate interior pair (opposite sides, between the lines)
- any two angles that are NOT equal here are supplementary, so they add to 180



a and b are vertically opposite, a and c are corresponding, b and c are alternate interior. So all four marked angles carry the same value, and every angle not marked here is 180 minus it



just the alternate interior pair: x sits below the upper line, y above the lower one, on opposite sides of the transversal. On parallel lines $x=y$

Worked: two expressions for one angle

Q. line L_1 is parallel to line L_2 . A transversal makes a pair of alternate exterior angles measuring $(3x+12)$ and $(5x-24)$ degrees. What is the obtuse angle formed?

- alternate exterior angles on parallel lines are equal, so $3x+12=5x-24$
- $36=2x$, giving $x=18$
- each of those angles is $3(18)+12=66^\circ$, and $5(18)-24=66^\circ$ agrees
- 66 is acute, so the obtuse angle at the same crossing is its supplement: $180-66$

Answer the obtuse angle is 114°

the last step is the one that gets skipped. The question asked for the obtuse angle, and 66 was sitting there looking finished

Triangle rules worth carrying

the three angles of any triangle

$$a+b+c=180^\circ$$

an exterior angle equals the two remote interior ones

$$e=a+b$$

isosceles: equal sides face equal angles

$$AB=AC \Rightarrow B=C$$

similar triangles, every pair of matching sides in one ratio

$$\frac{DE}{AB} = \frac{EF}{BC} = k$$

perimeter scales the same way a single length does

$$P_2=kP_1$$

the reference sheet gives you the 180 in a triangle and both special triangles. It gives you none of the parallel-line rules, so those live in your head