Geometry

Vocab

- Planes have two dimensions, lenght and width.
- Planes can be specified by a letter with **no dot**.
- Points are coplaner if they lie on the same plane.
- Any three points **are** coplaner.
  - if there are three points that are non-coliniar they must be complaner.
- Space is a set of all points.
  - Space is 3 dimensional
- Any solid figure is a space figure
- A line goes on forever in two directions and has zero end points.
- a segment starts at one point and ends at another.

> **1 / 2** A *line segment* starts at one point and ends at another point, like this:

- a ray starts at one point and continues on forever.

> **1 / 2** A *ray* starts at one point and continues on forever in one direction, like this:
>
> **+ Get another hint (1/2)**

- Collinear means that points lie on the same line.
  - if there are only two points, they **must** be collinear, because you can always put a line through them
- Lines are named using any two points on the line. The order doesn't matter.

- Lines must have the below shape above them.

$$\overleftrightarrow{YC}$$

- parallel, two lines that run next to eachother for ever. the **never intersect eachother**
- Angle:

 - a figure composed of two rays sharing a common endpoint

- Circle (and non-circle) cheat sheet:

Definition of a circle	Teacher's comments
Ivy's definition	Sorry, this is incorrect. An ellipse, for example, would also fit your definition.
Ethan's definition	Correct! Your definition is very clear and precise.
Ebuka's definition	Your definition is close, but it isn't precise enough. A half-circle, for example, would also fit your definition.

Measuring angles

Name	Degree
Acute Angles	1 - 89
Right Angles	90
Obtuse Angles	91 - 179
Straight Angle	180
180 < Reflex Angle < 360	--
Full Circle or Full Angle	360

- To solve for x angles, change the degrees into numbers and compair like so:
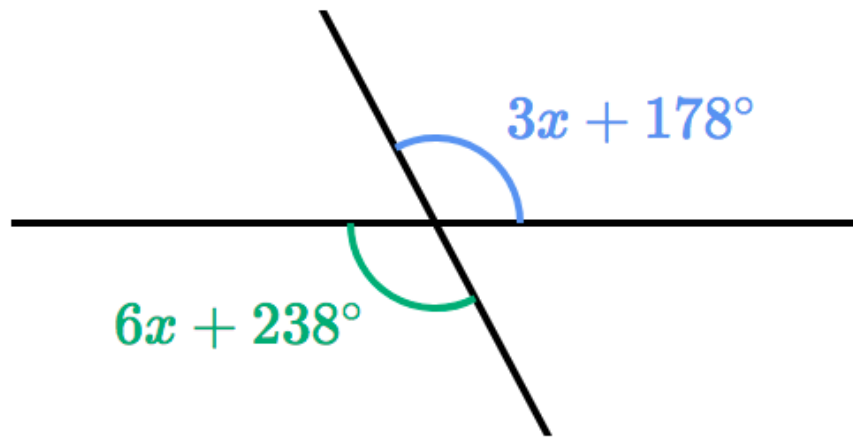
$3x + 178 = 6x + 238$
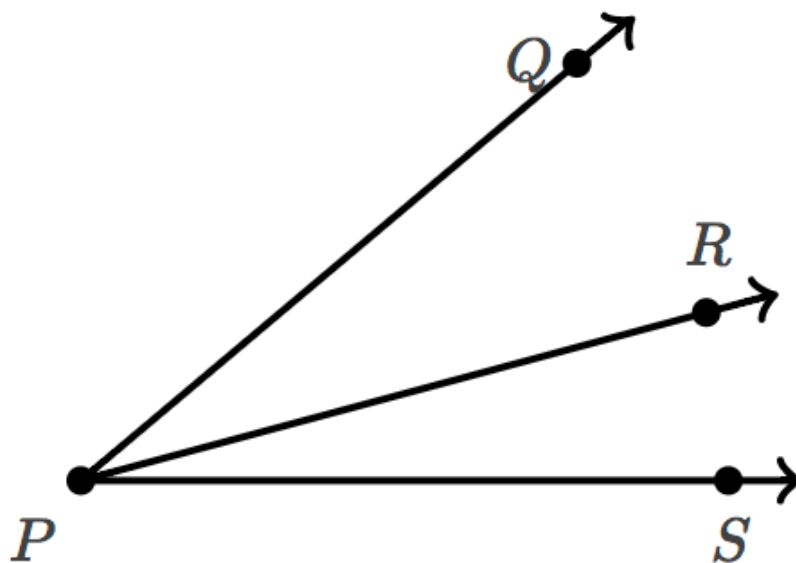
$178 = 3x + 238$

$0 = 3x + 60$

$-3x = 60$

$-x = 20$

$x = -20$

- when given a problem like this, you may solve using the following:

  find *qpr* (25)

qps = 40

rps = 8x + 7

qpr = 9x + 16

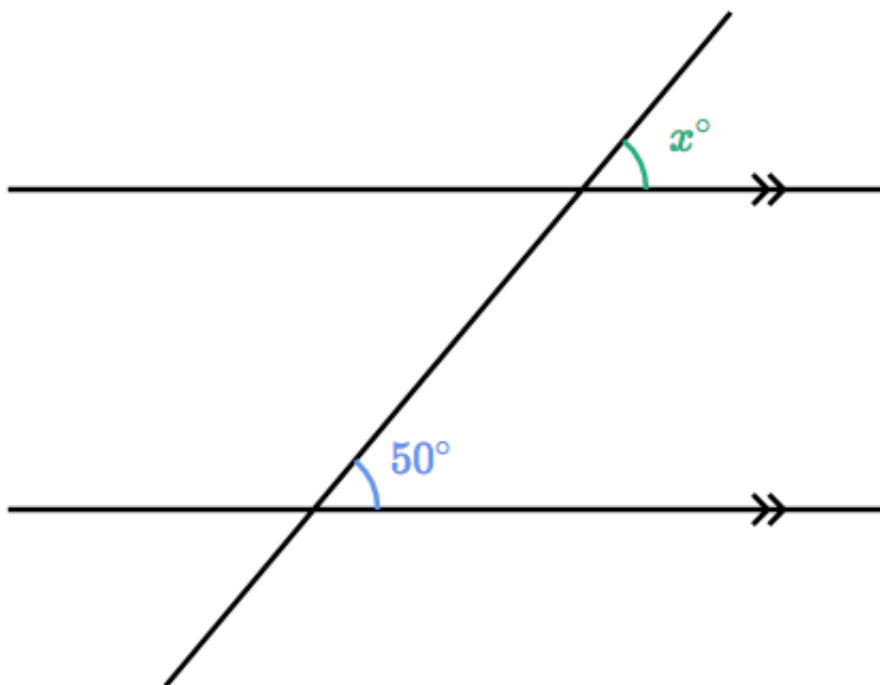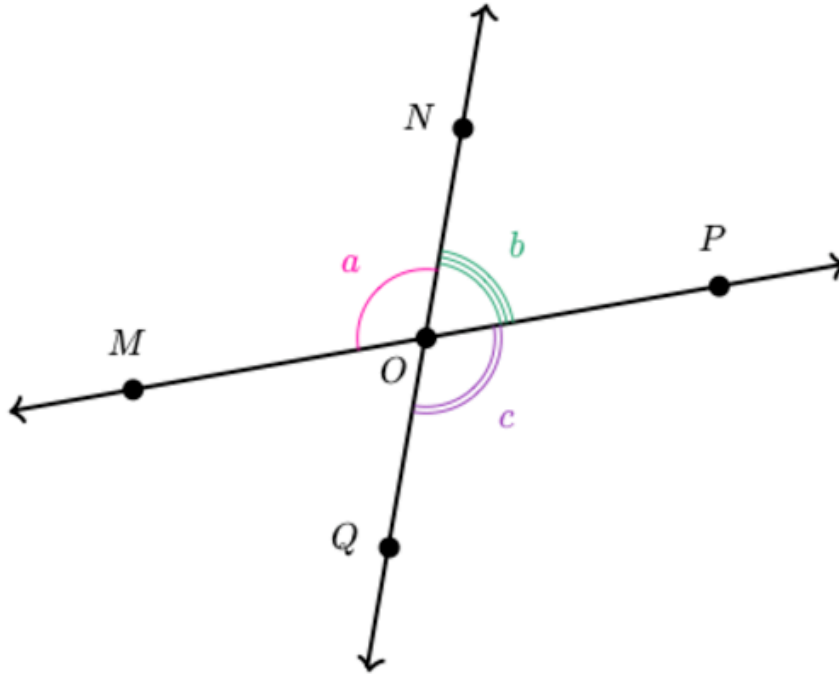
8x + 7 + 9x + 16 = 40

17x + 23 = 40

17x = 17

x = 1

- When one line goes through two parelel lines, it creates two pairs of identical arrows. Here is an example:

- Inorder to solve a problem like this:

Complete the equations to prove that vertical angles always have equal measure.

In terms of b and a number in degrees,	$c =$ [ ]
In terms of b and a number in degrees,	$a =$ [ ]
Combining these equations to get a in terms of c,	$a =$ [ ]

- Inorder To solve this, first we need to remember that the full circle is 360, therfore line
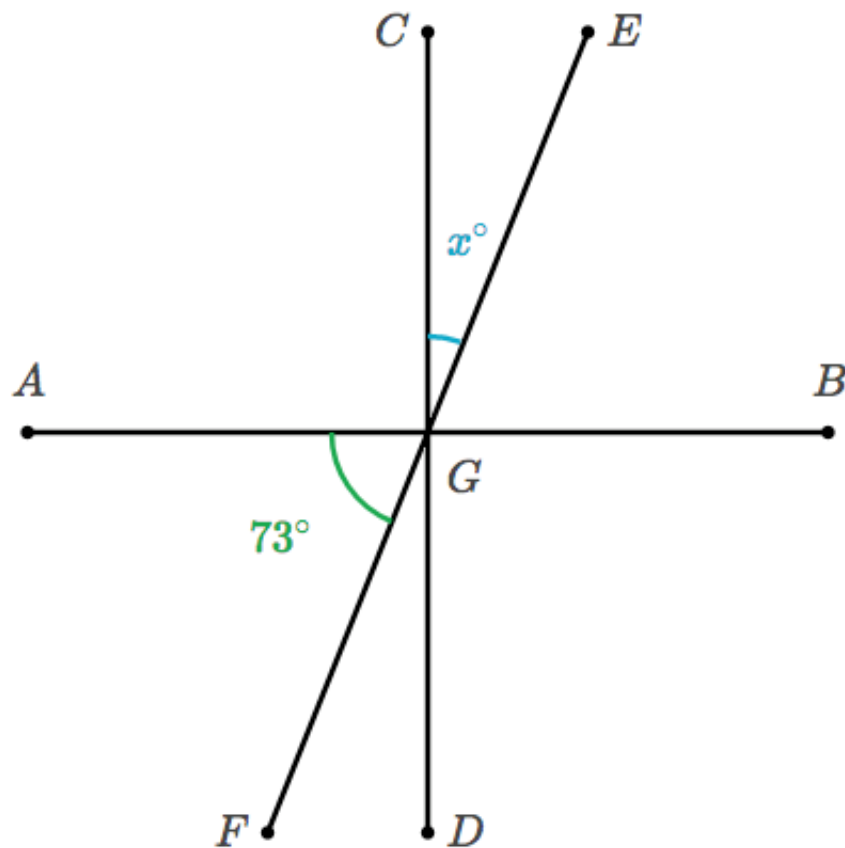
$$\overleftrightarrow{NQ}$$

  - is equal to 180 degrees and therfore $c = 180 - b$.

$$\overleftrightarrow{MP}$$

  - is also equal to $180 - b$

  - and this answers our final question, witch is that $c = a$

- when more than two lines intersect, you can subtract known angesl to find a variable, for example:
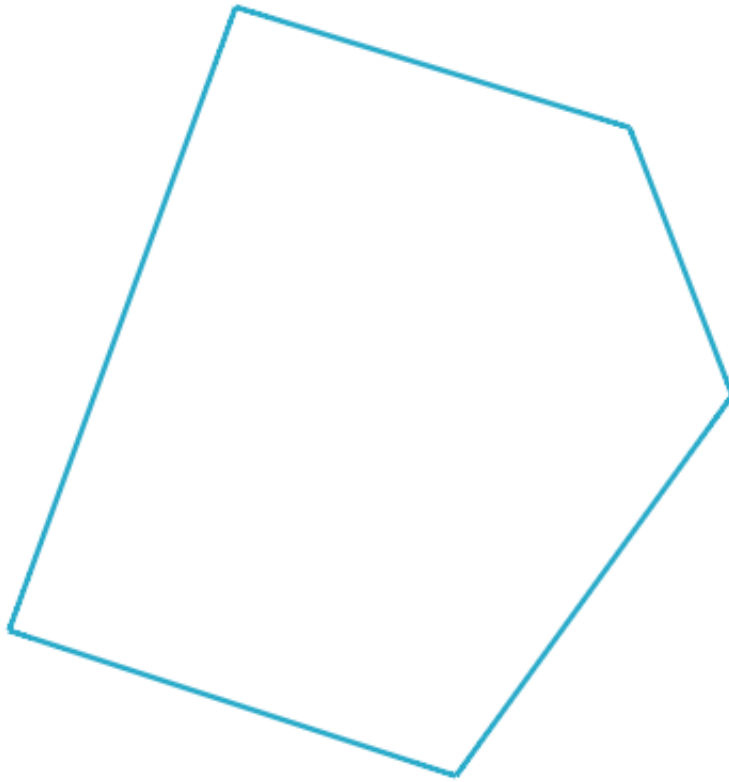
C $\quad$ E

$x°$

A $\qquad$ B

G

73°

F $\quad$ D

we know that:

- angel $CB = 90$
- $CB = AD$
- $FD = 90 - AF$
- $AF = 73$
- $FD = 90 - 73 = 17$
- $FD + AF = AD$
- $AD = CB$
- $CE = FD$

Therfore $CE = 17 = x$ and we have our answer!

- NOTE: trinagles angles all **add up to** 180

- Inorder to find the interior angles on a polygon like the one below

We multiply the number of sides by 180 then we just subtract 360 and get our answer. In this case $180 \ast 5 = 900$ and $900 - 360 = 540$ therfore our answer is 540.

Here is a more detailed explanation:

> Yes, there is!
>
> A polygon with n sides will make n triangles, which each have $180°$. So, that gives us
>
> $$180° \cdot n.$$
>
> But then we always have to subtract off $360°$ for the circle of non-interior angles in the middle, so the formula is
>
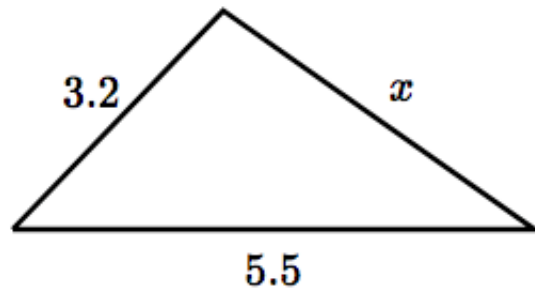> $$180° \cdot n - 360°.$$
>
> Many people factor out $180°$ and write it like this:
>
> $$180°(n - 2)$$

- Triangles:
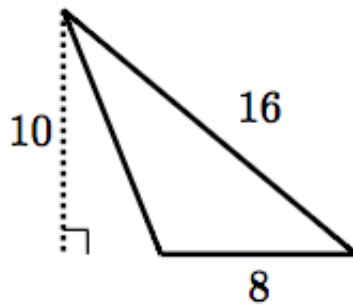 - any one side of a triangle must be shorter than the other two combined

- Example:

  - $3.2 + 5.5 = 8.7$ => therfore $x < 8.7$
  - $5.5 - 3.2 = 2.3$ => therfore $x > 2.3$
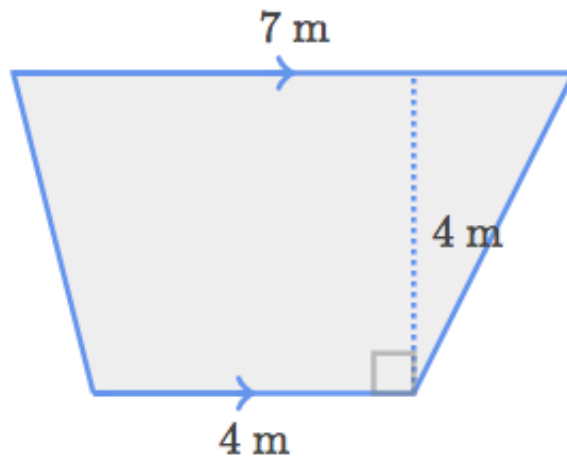- Area of triangles
  - Take the followign triangle:

  - this triangle is half a parallelogram.
  - the area of the parallelagram is width*height or $10 * 8$
  - therefore our triangle has an area of $1/2 \cdot (b_1 + b_2) \cdot h$ or 40
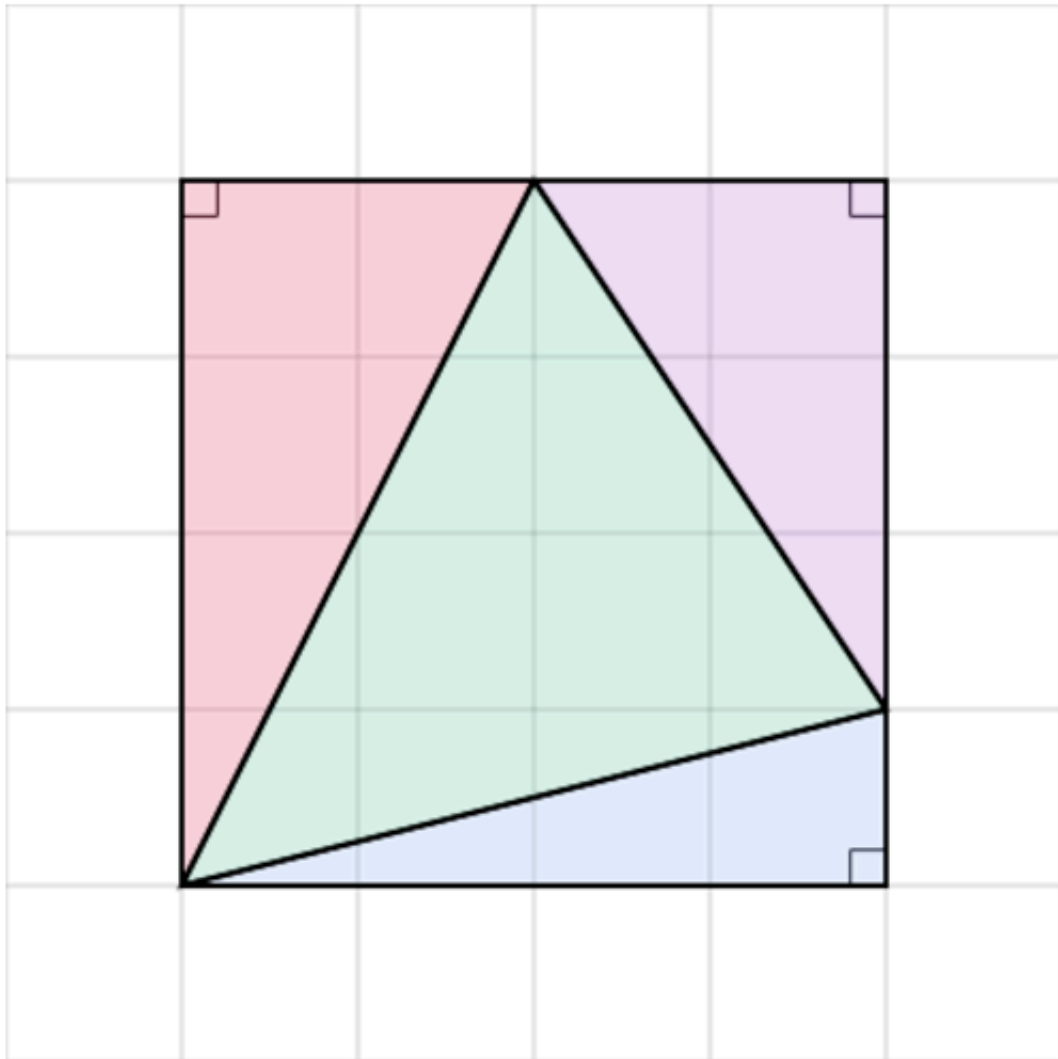- Trapazoids
  - Formula: Area = $21 \cdot (b1+b2) \cdot h$
  - Example on how to find the area

7 m

4 m

4 m

- now we aplly the formula: $1/2 \cdot (4 + 7) \cdot 4$ = 22
- Triangles on a grid:
  - find the bigger rectangle:

We can enclose this triangle in a square with area $4 \times 4 = 16$.

- then we add the area of the three right triangles:
  - $\boxed{3}$ = 2*3/2
  - $\boxed{2}$ = 1*4/2
  - $\boxed{4}$ = 2*4/2
- now we just subtract that from our square to get our final answer wich is $\boxed{7}$

- Radios = half diamater
- diamater is the langth between two sides of the circle
- Area of a circle is $\boxed{\pi * r \char`\^ 2}$ EX:
  - Radios 2:
  - $\boxed{\pi * 2 \char`\^ 2}$
- Radios is circumfrence devided by 2π
- circumference is 2π * radius