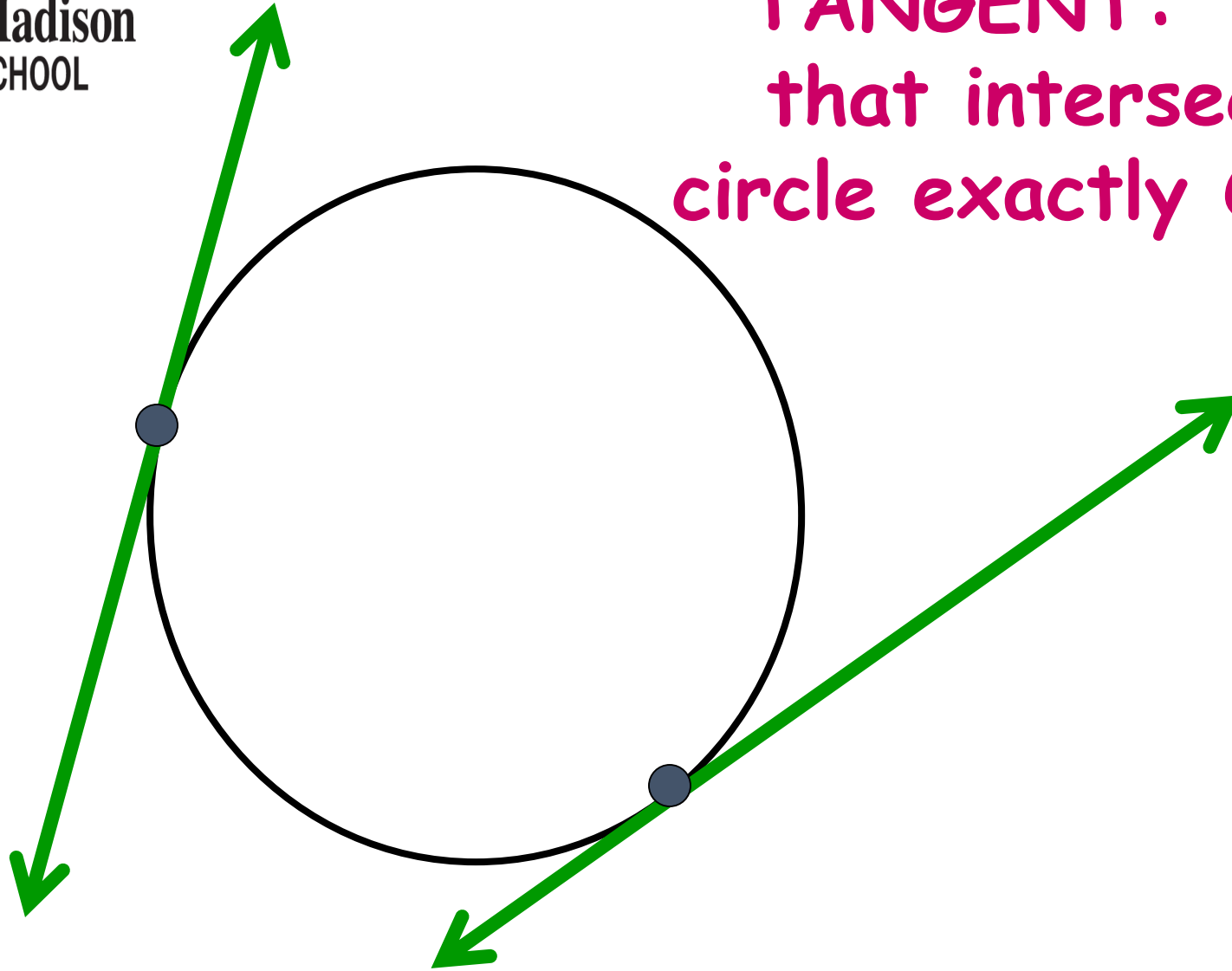




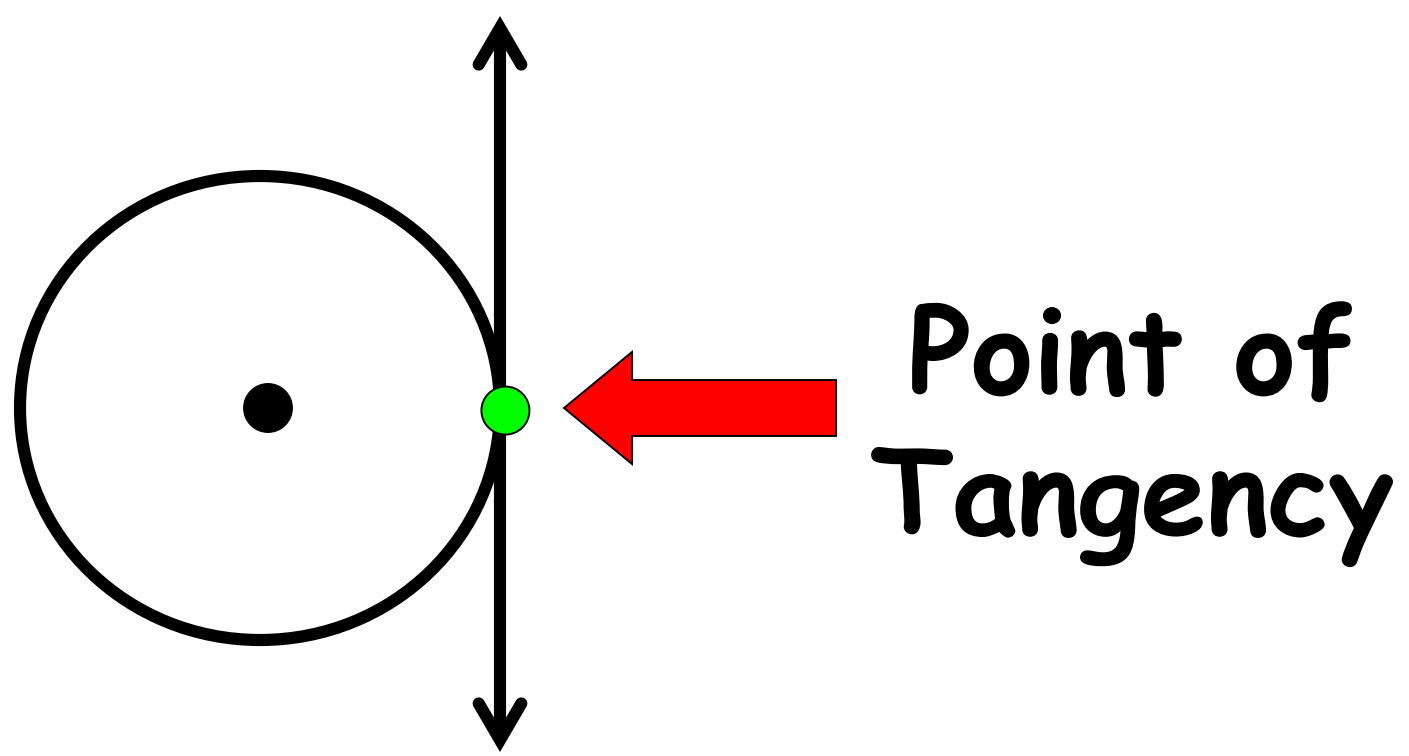
James Madison
HIGH SCHOOL

TANGENT: a LINE
that intersects the
circle exactly **ONE** time





James Madison
HIGH SCHOOL



Point of
Tangency



James Madison
HIGH SCHOOL

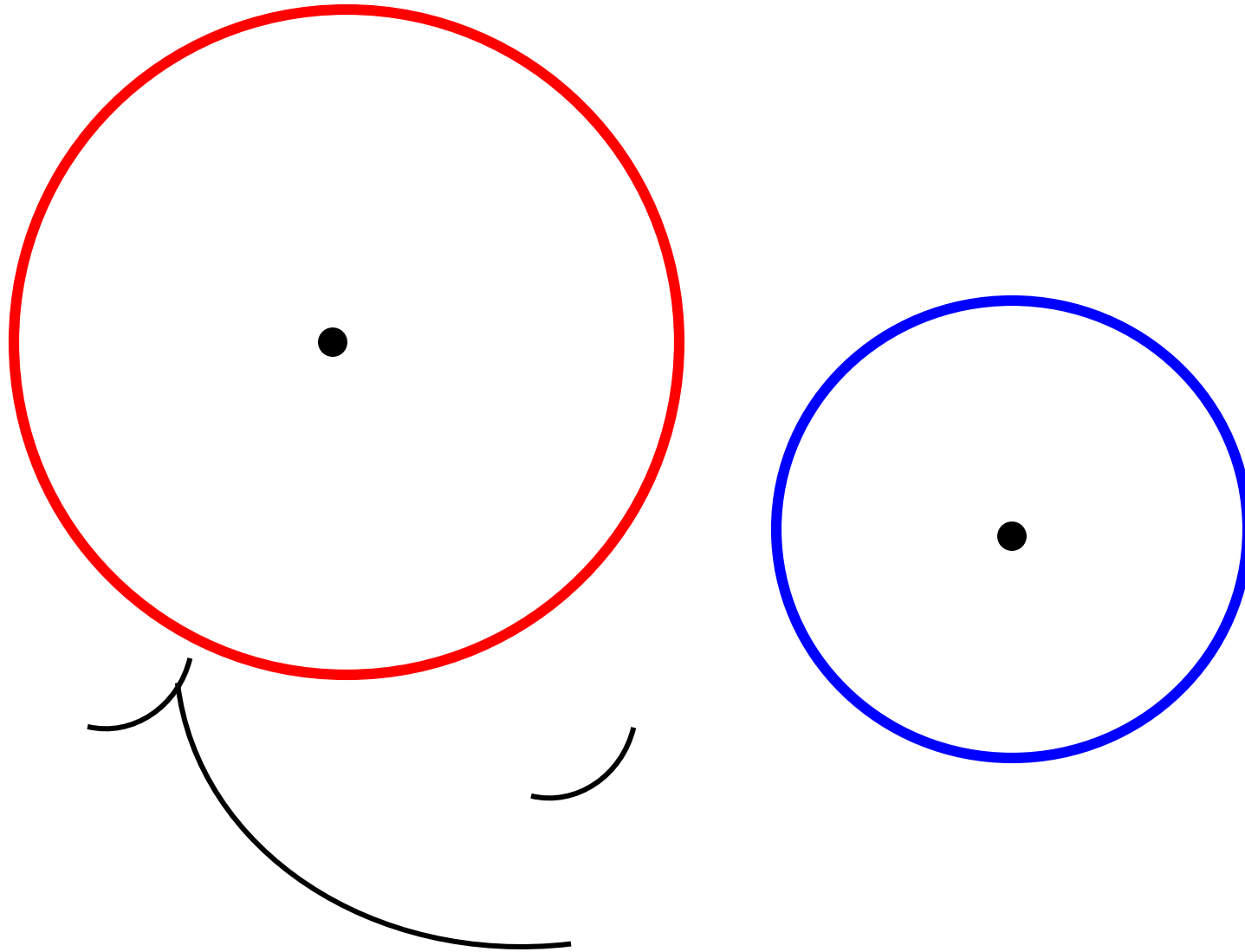
Two circles can intersect...

- **in two points**
- **one point**
- **or no points**



James Madison
HIGH SCHOOL

No points of intersection (different center)

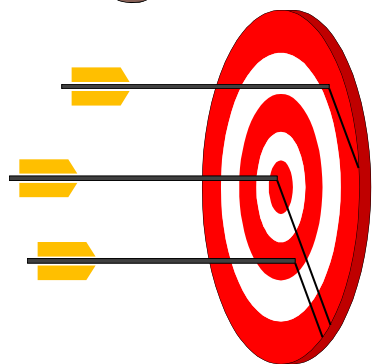




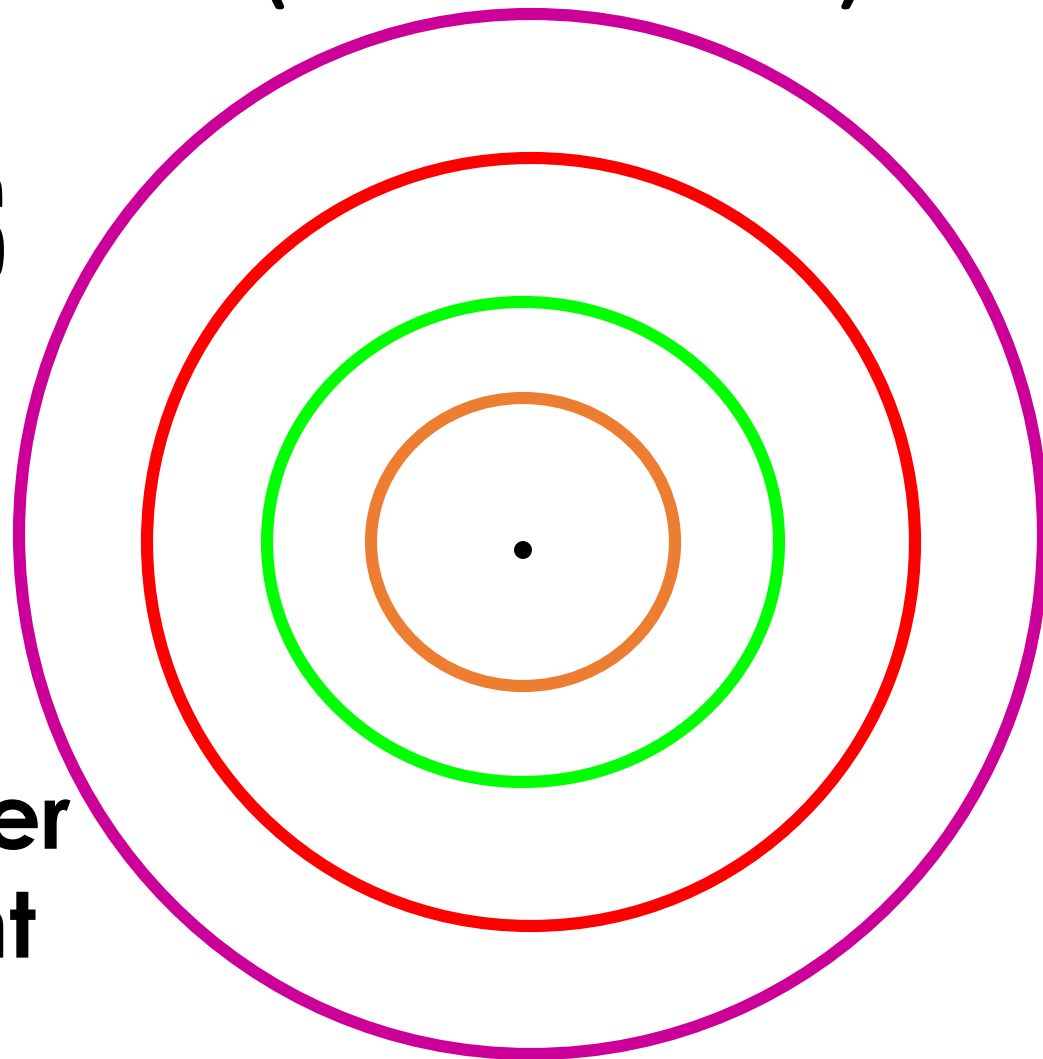
James Madison
HIGH SCHOOL

No points of intersection (same center)

Concentric Circles



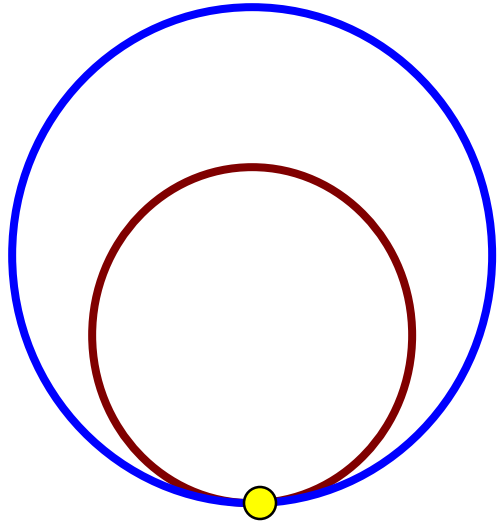
**Same center
but different
radii**



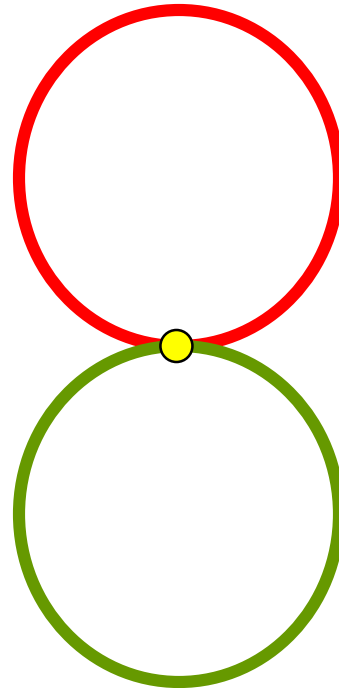


James Madison
HIGH SCHOOL

1 point of intersection (Tangent Circles)



**Internally
Tangent**

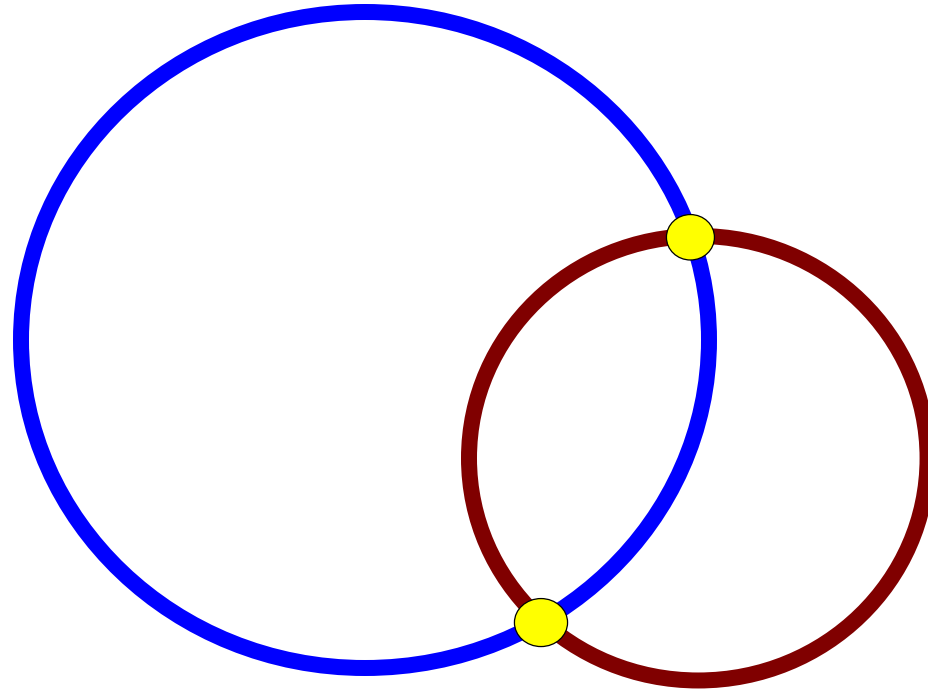


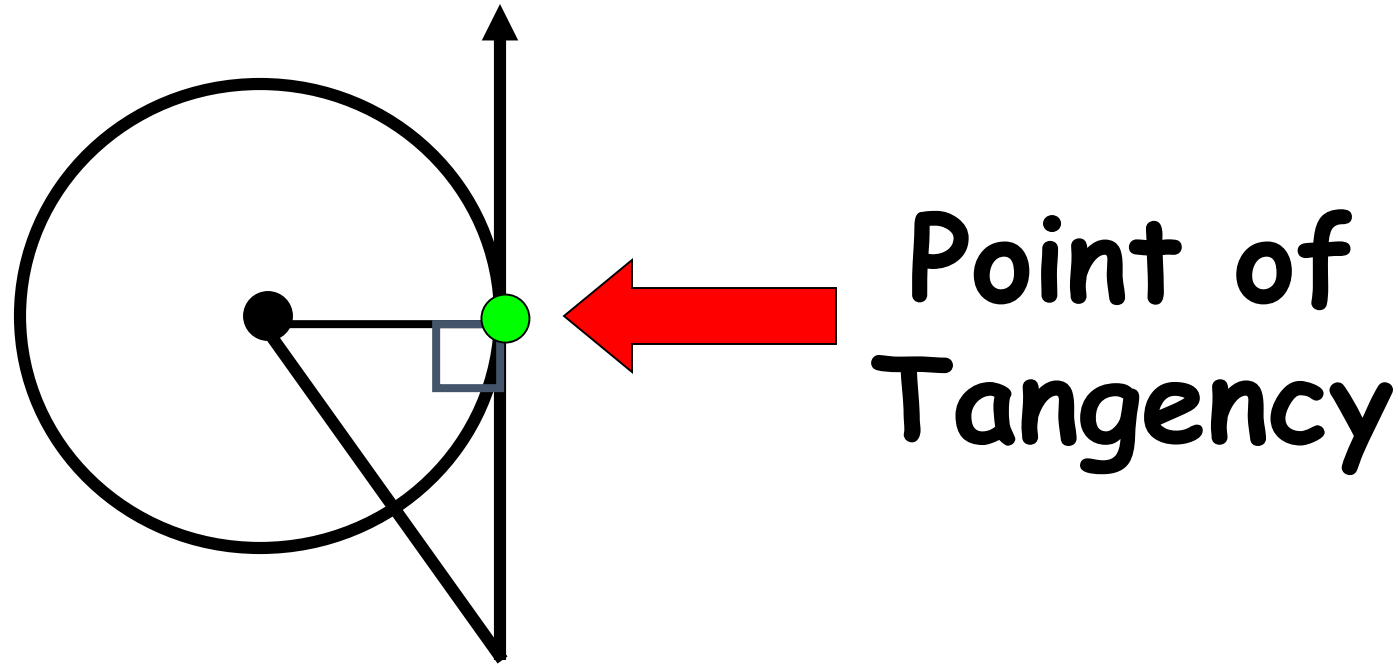
**Externally
Tangent**



James Madison
HIGH SCHOOL

2 points of intersection





Point of
Tangency

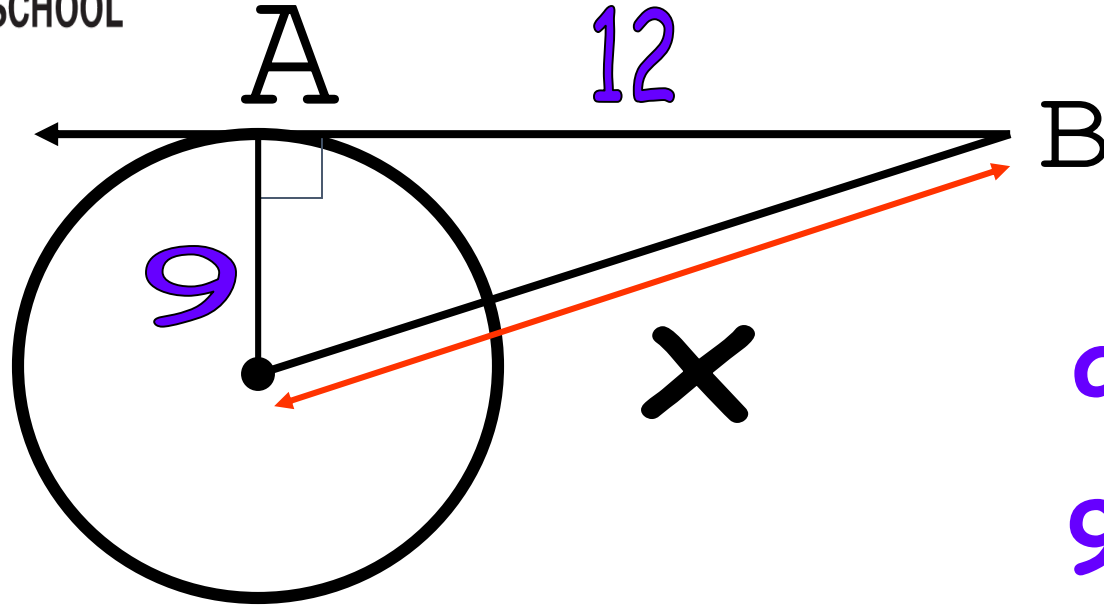
If a line (segment or ray) is tangent to a circle, then it is perpendicular to the radius drawn to the point of tangency.

More Pythagorean Theorem type problems!
Yeah!! 😊



James Madison
HIGH SCHOOL

1. Find x



$$a^2 + b^2 = c^2$$

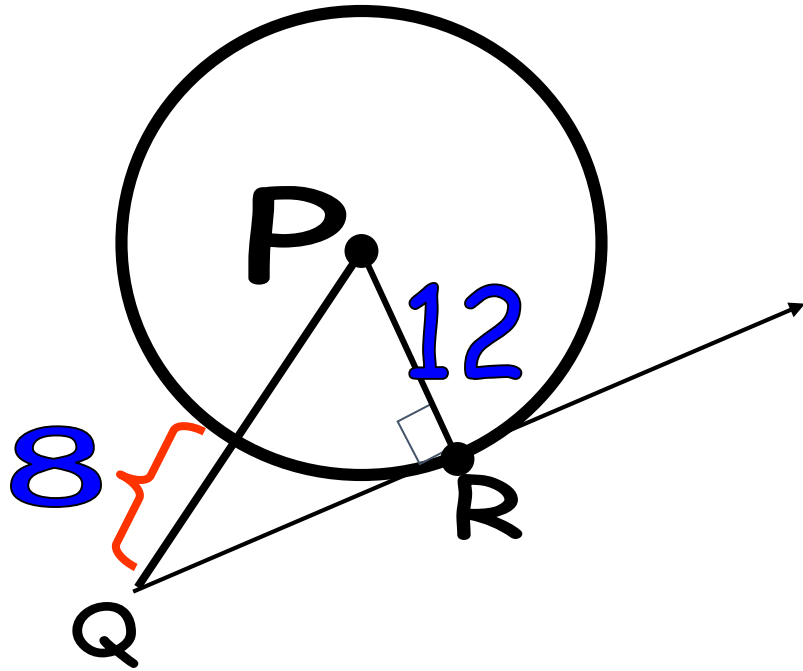
$$9^2 + 12^2 = x^2$$

$$x = 15$$



James Madison
HIGH SCHOOL

2. Find RQ



$$a^2 + b^2 = c^2$$

$$12^2 + (QR)^2 = (8+12)^2$$

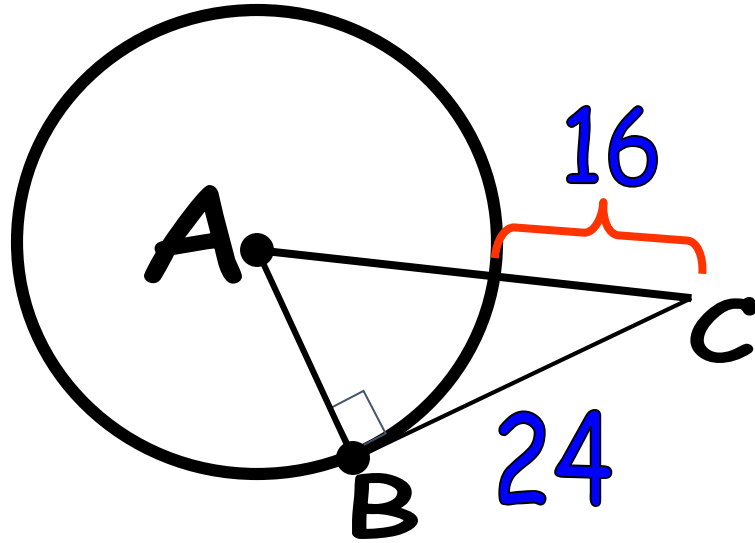
$$12^2 + (QR)^2 = 20^2$$

$$RQ = 16$$



James Madison
HIGH SCHOOL

3. Find the radius.



$$r^2 + 24^2 = (r + 16)^2$$

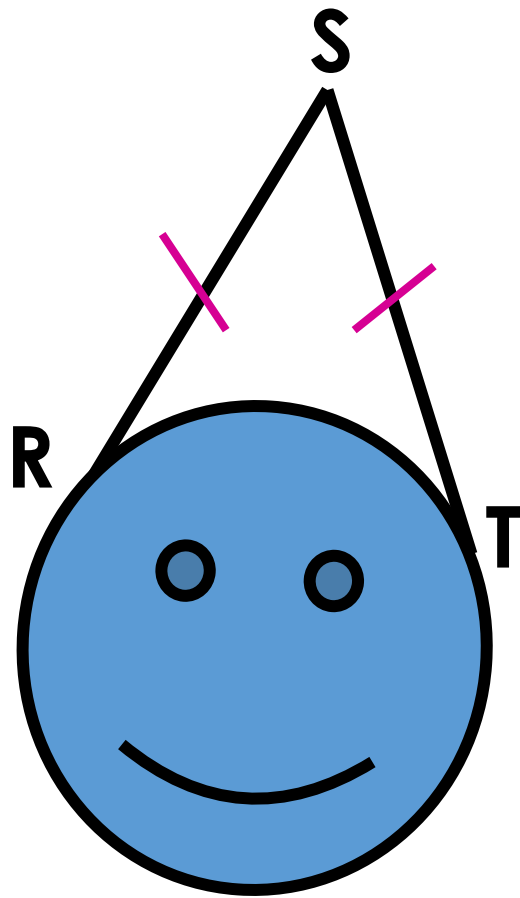
$$r^2 + 576 = r^2 + 32r + 256$$

$$320 = 32r$$

$$r = 10$$

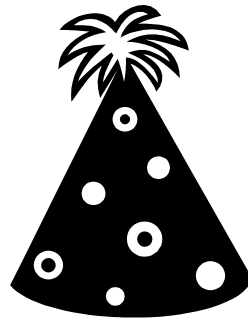


James Madison
HIGH SCHOOL



$$RS \cong TS$$

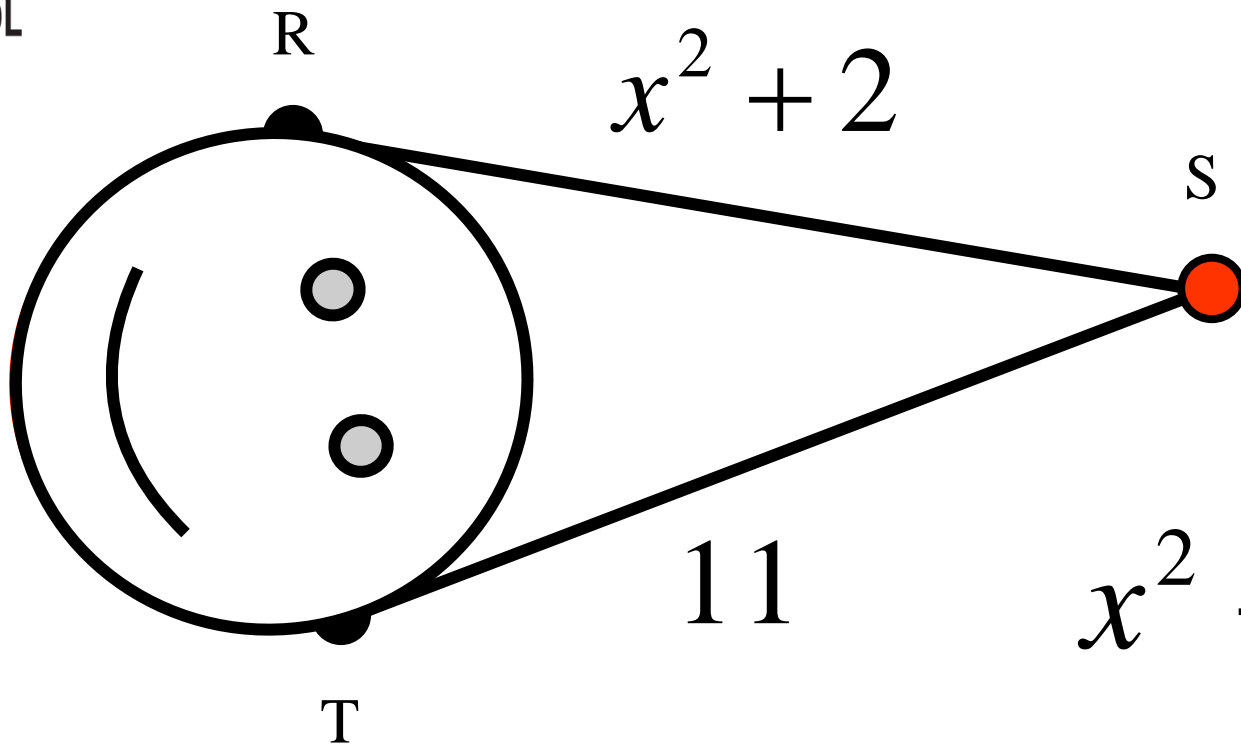
If two segments from
the same exterior point
are tangent to a circle,
then they are congruent.



Party hat
problems!



4. Find x



$$x^2 + 2 = 11$$
$$x^2 = 9$$

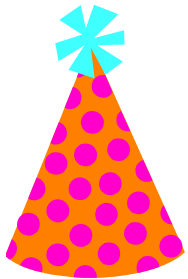
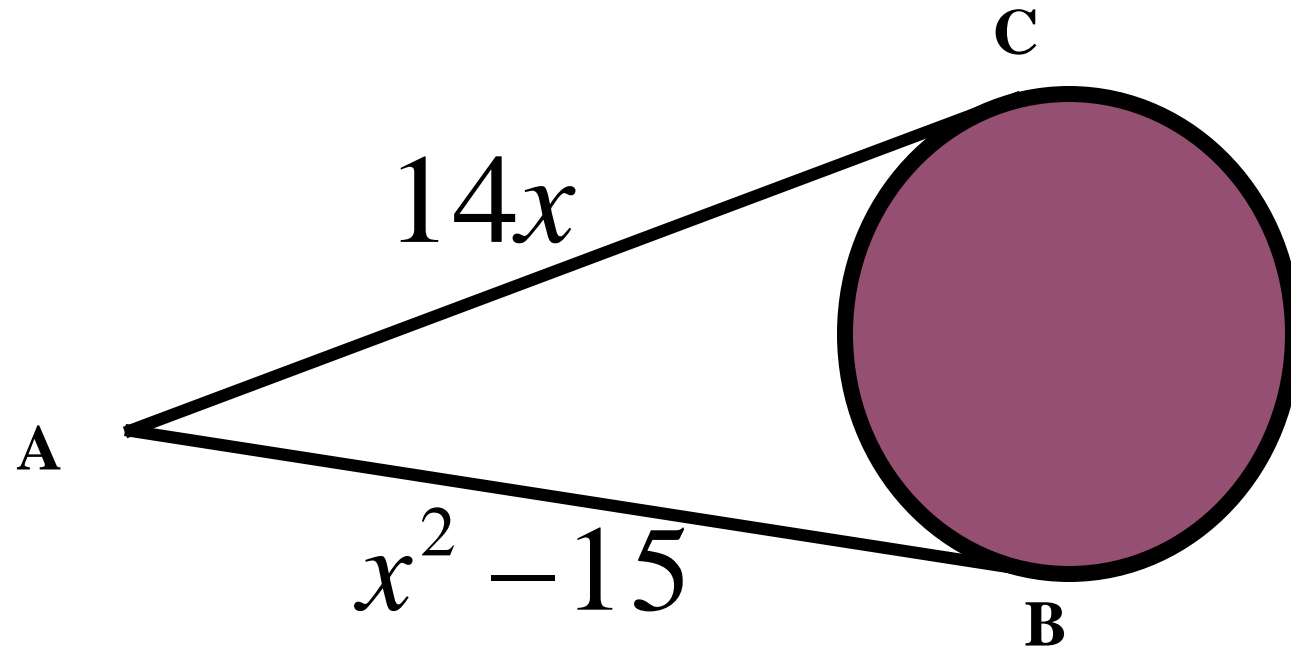
$$x = 3 \text{ or } x = -3$$





James Madison
HIGH SCHOOL

5. Find x

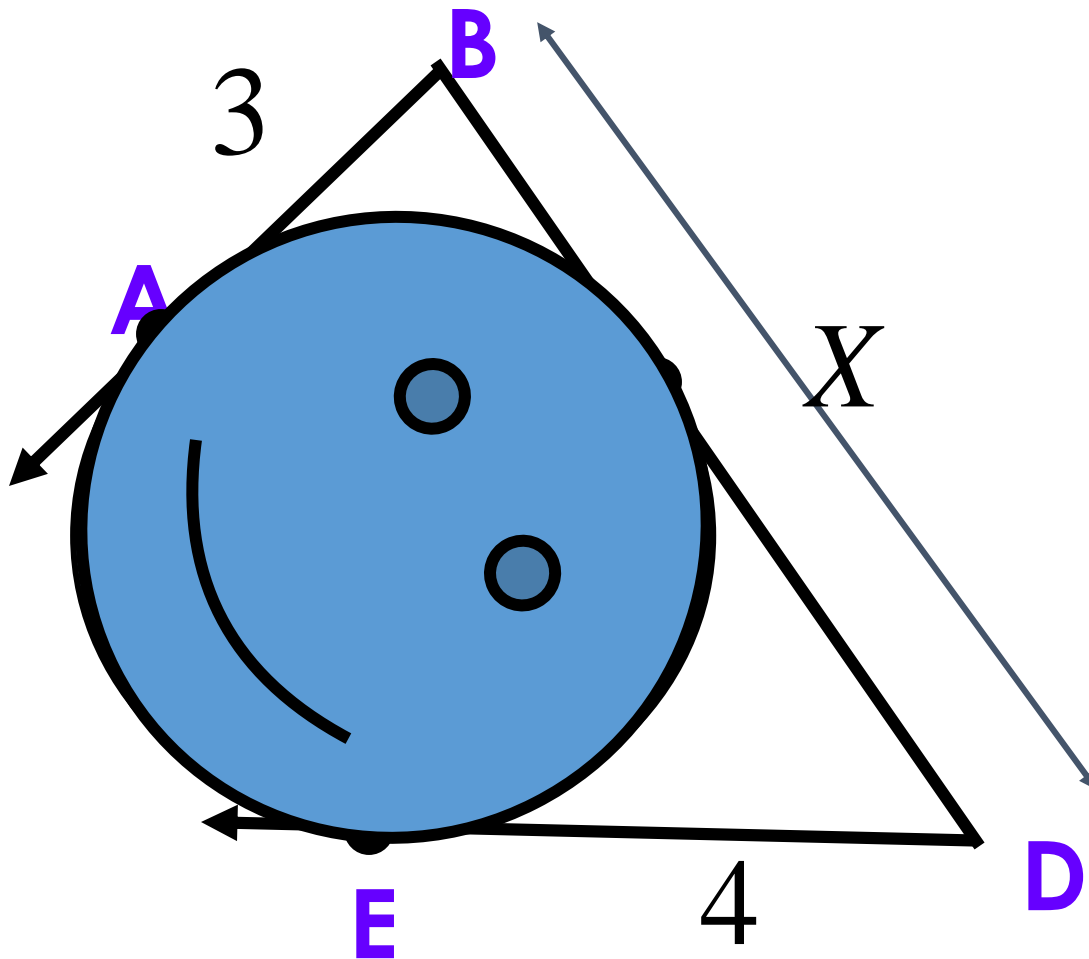


$$x = 15$$



6. Find x.

$$X = 7$$





James Madison
HIGH SCHOOL

7. Find NP

$$NP = 18$$

