PROPERTIES OF TANGENTS
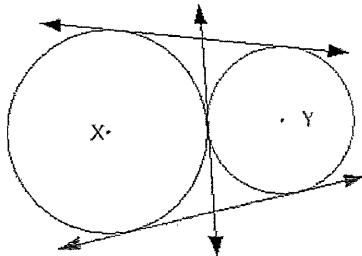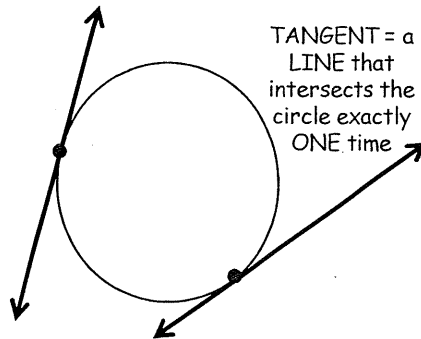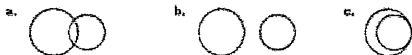
X·   · Y

TANGENT = a
LINE that
intersects the
circle exactly
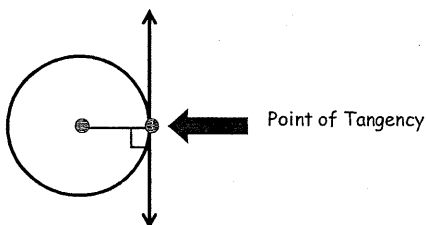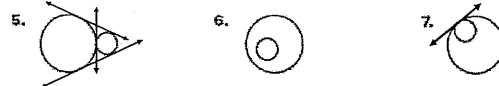ONE time

Common Tangents

Tell how many common tangents the circles have and draw them.

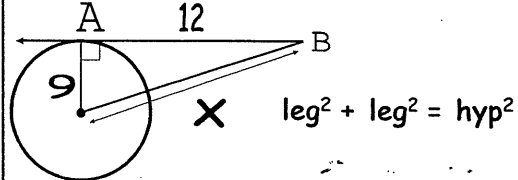a.   b.   c.

YOUR TURN

Tell how many common tangents the circles have and draw them.

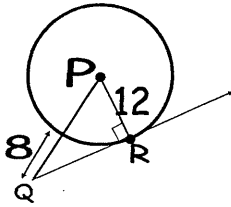5.   6.   7.

Point of Tangency

If a line is tangent to a circle, then it is perpendicular to
the radius drawn to the point of tangency

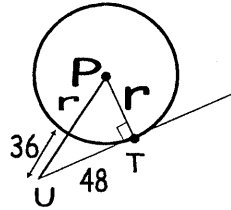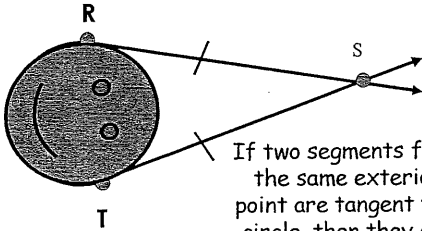More Pythagorean Theorem type problems!
Yeah!! ☺

1. Find x

A   12   B

9   X $leg^2 + leg^2 = hyp^2$

2. Find RQ

P · 12

8

R

Q

YOUR TURN!!!
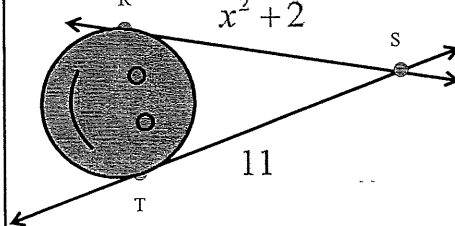## Find PT

P · r r

36

T

U 48

$$RS \cong TS$$

R

S

T

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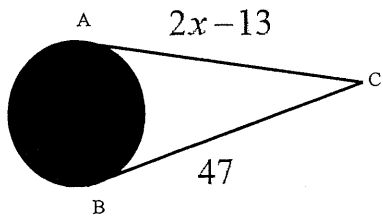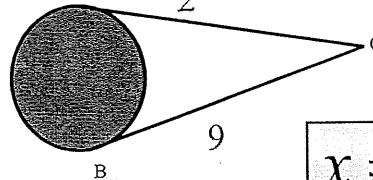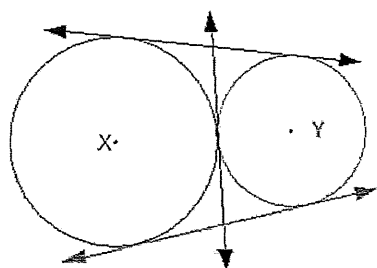
Party hat problems!

---

3. Find x

R

$$x^2 + 2$$

S

11

T

$$x = $$

---

4. Find x

A $$2x - 13$$

C

47

B

$$x = $$

YOUR TURN
Find x

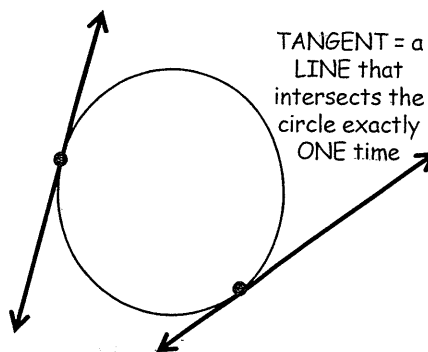A $$\frac{1}{2}x - 5$$

C

9

B

$$x = $$

PROPERTIES OF TANGENTS

TANGENT = a LINE that intersects the circle exactly ONE time
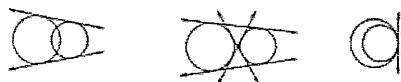

Common Tangents

Tell how many common tangents the circles have and draw them.

a.   b.   c.
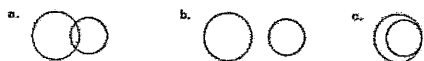
Solution
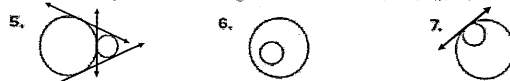
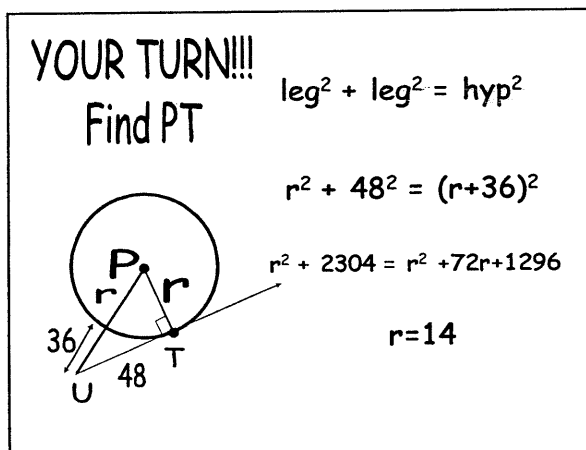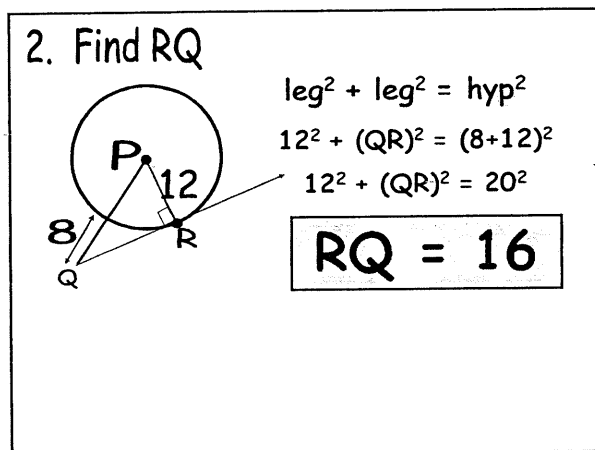a. 2 common tangents   b. 4 common tangents   c. 1 common tangent

http://www.ies.co.jp/math/java/geo/comtan/comtan.html

YOUR TURN

Tell how many common tangents the circles have and draw them.

5.   6.   7.

3 common tangents   0 common tangents   1 common tangent
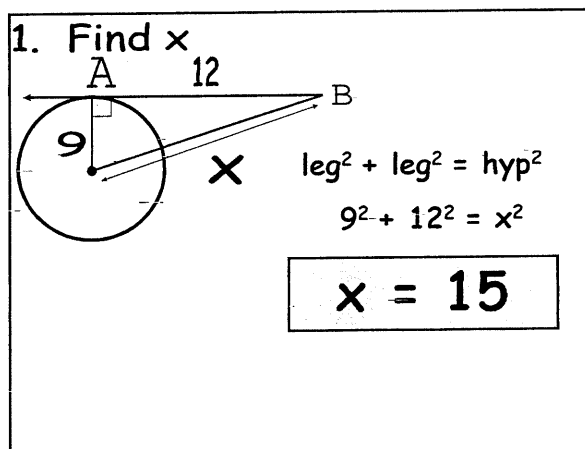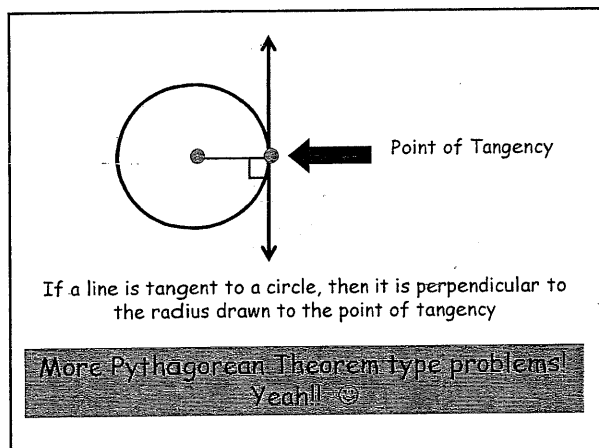
Panel 1:

Point of Tangency

If a line is tangent to a circle, then it is perpendicular to the radius drawn to the point of tangency

More Pythagorean Theorem type problems! Yeah!! ☺

Panel 2:

1. Find x

A 12 B

9

x

$$leg^2 + leg^2 = hyp^2$$

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

$$x = 15$$

Panel 3:

2. Find RQ

P 12 R

8

Q

$$leg^2 + leg^2 = hyp^2$$

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

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

$$RQ = 16$$

Panel 4:

YOUR TURN!!!
Find PT

P r r

36 48 T

U

$$leg^2 + leg^2 = hyp^2$$

$$r^2 + 48^2 = (r+36)^2$$

$$r^2 + 2304 = r^2 + 72r + 1296$$

$$r = 14$$

$$RS \cong TS$$

R
S
T

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

Party hat problems!

---

3. Find x

R
$x^2 + 2$
S
11
T

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

$$\boxed{x = 3}$$

---

4. Find x

A
$2x - 13$
C
47
B

$$\boxed{x = 30}$$

YOUR TURN

Find x

A
$\frac{1}{2}x - 5$
C
9
B

$$\boxed{x = 28}$$

CCGPS Analytic Geometry

Homework
Page 188 #s 1-8
#s20 - 26