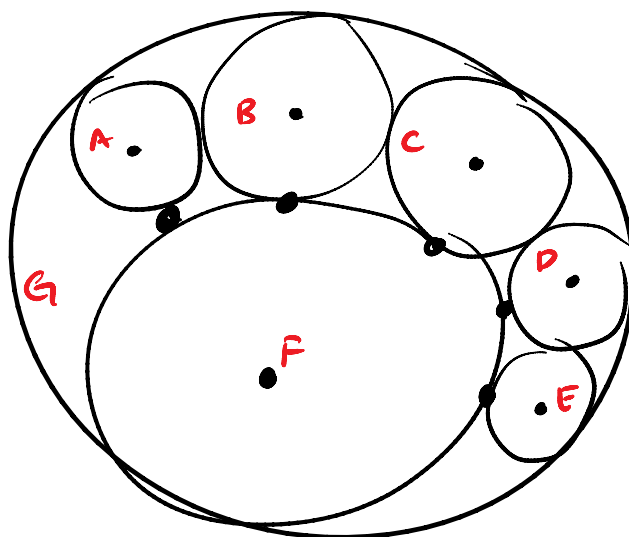#19

If 2 of 7 circles are chosen at random, what is the probability that the chosen pair are
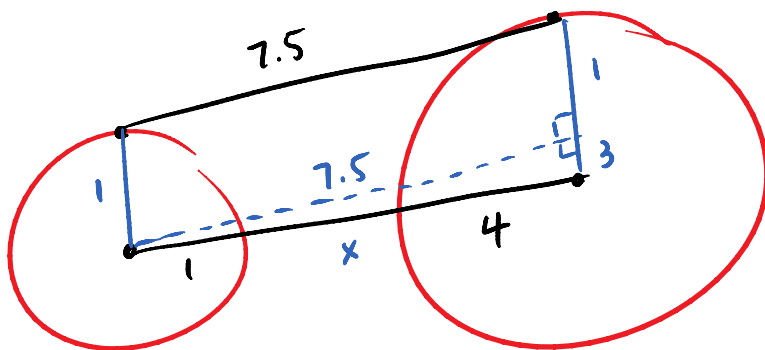
a. Internally tangent

2/7

b. Externally tangent

3/7

c. Not tangent

2/7

#20 Find, to the nearest tenth, the distance between two circles if their radii are 1 and 4, and the length of the common external tangent is $7\frac{1}{2}$
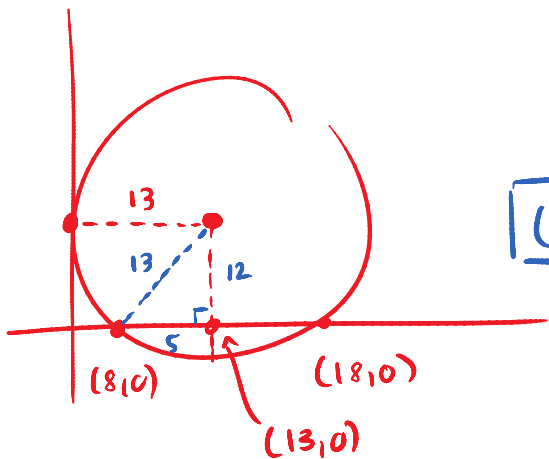
$3^2 + 7.5^2 = x^2$

$9 + 56.25 = x^2$

$65.25 = x^2$

$8.1 \approx x$

$8.1 - 4 - 1 = \boxed{3.1}$

#24 Find the coordinates of the center of the circle that is tangent to the y-axis and intersects the x-axis at (8,0) and (18,0)

13   13   12
5
(8,0)   (18,0)
(13,0)

$(13,12)$ or $13,-12$

↑ if circle center Below x axis

#25 Given: Two Concentric circles w/ center E

AB = 40
CD = 24
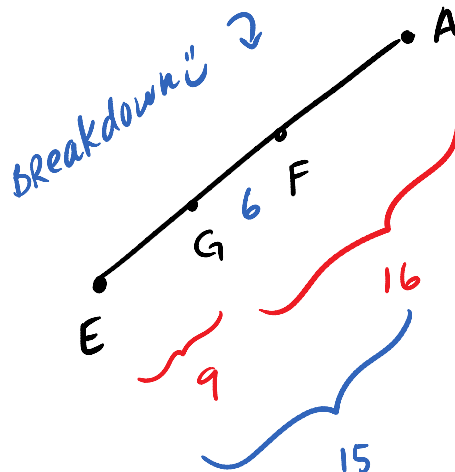$\overline{CD} \perp \overline{AE}$
AB tangent at C

Find: AF

40   40
20
20
C   12   F   16
15   12
B   9   G
E   D
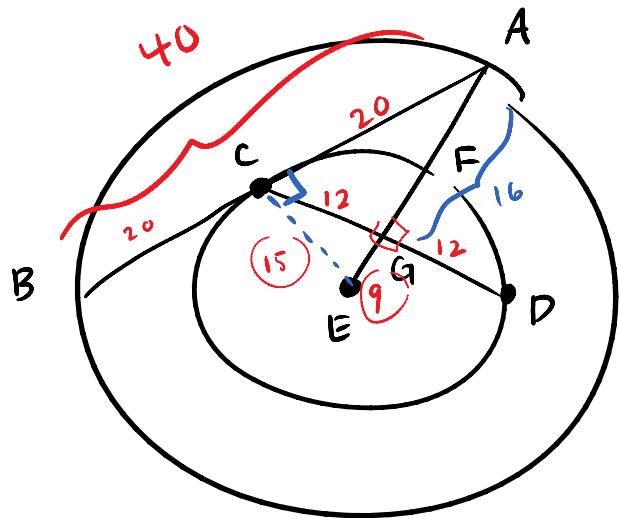
alt. on hypotenuse

$12^2 = EG \cdot 16$
$144 = 16EG$
$EG = 9$

breakdown ⊃

A
F
6
G
16
E
9
15

SO AF = 16-6
= 10

#27 Given ⓢ E and F w/ $\overline{AC}$ tangent at B and C

DE = 10
FB = 4

Find: AB

C $4\sqrt{10}$ B

10   4

6   x   4

D   10   E   F   4   a   b   A

14
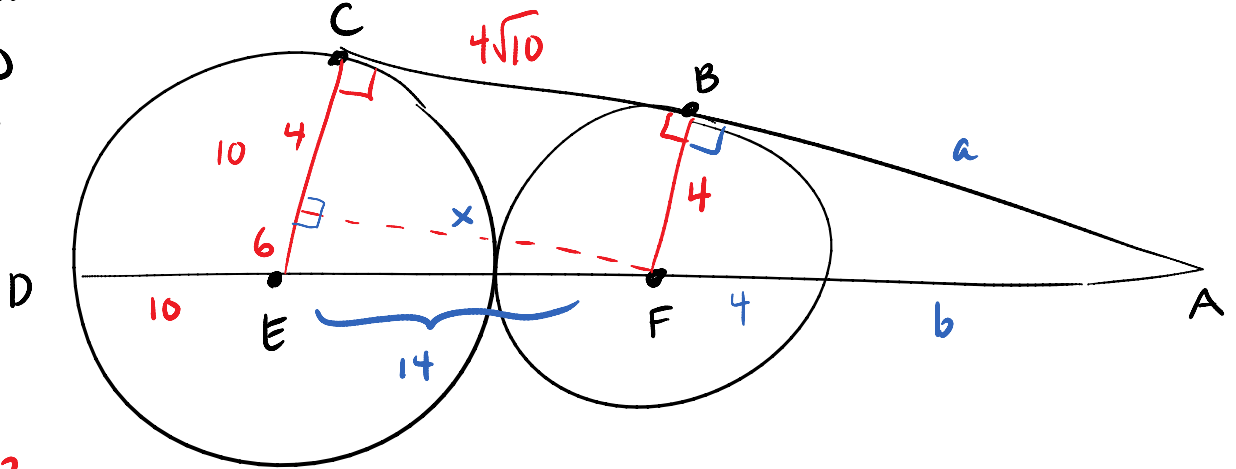
$x^2 + 6^2 = 14^2$

$x^2 + 3^2 = 7^2$

$x^2 = 40$

$x = 2\sqrt{10}$

$\boxed{x = 4\sqrt{10}}$

note: $\triangle CEA \sim \triangle BFA$

$$\frac{a}{4\sqrt{10} + a} = \frac{4}{10}$$

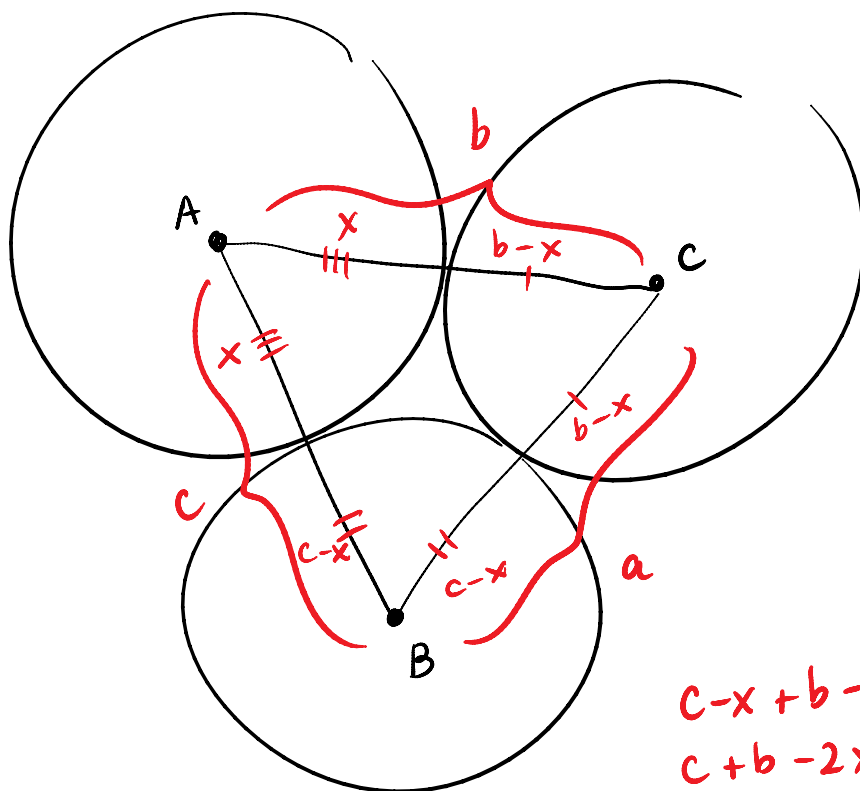$10a = 4(4\sqrt{10} + a)$

$10a = 16\sqrt{10} + 4a$

$\dfrac{6a}{6} = \dfrac{16\sqrt{10}}{6}$

$a = 8\dfrac{\sqrt{10}}{3}$

$\boxed{AB = \dfrac{8\sqrt{10}}{3}}$

↓ KEEP GOING!!

#29

A

b

x

b-x

C

x

b-x

c

c-x

c-x

a

B

$c - x + b - x = a$

$c + b - 2x = a$

$\dfrac{-2x}{-2} = \dfrac{a - b - c}{-2}$

$x = \dfrac{-a + b + c}{2}$

or

$x = \dfrac{c - a + b}{2}$