

LESSON  
6.6

Exercise  
Set A



MM2G3a Understand and use properties of chords, tangents, and secants as an application of triangle similarity.  
MM2G3d Justify measurements and relationships in circles using geometric and algebraic properties.

[30, 6]

Find the value of  $x$ .

1.  $23(15) = 23(x)$   
 $x = 15$

2.  $3(4) = 6x$   
 $12 = 6x$   
 $2 = x$

3.  $6(x+4) = 12x$   
 $6x+24 = 12x$   
 $24 = 6x$   
 $4 = x$

Find AB and DE.

4.  $AB \rightarrow (5+5)(6)$   
 $AB \rightarrow 10$   
 $DE \rightarrow 12+5$   
 $DE \rightarrow 17$

5.  $6(x+5) = 12x$   
 $6x+30 = 12x$   
 $30 = 6x$   
 $5 = x$

6.  $(x+10)(x+1) = x(x+13)$   
 $x^2+11x+10 = x^2+13x$   
 $11x+10 = 13x$   
 $10 = 2x$   
 $5 = x$

$AB \rightarrow 15+6 = 21$   
 $DE \rightarrow 18+5 = 23$

6.  $(x-10)(x+12) = x(x-6)$   
 $x^2+2x-120 = x^2-6x$   
 $2x-120 = -6x$   
 $-120 = -8x$   
 $15 = x$

$AB \rightarrow 5+27 = 32$   
 $DE \rightarrow 9+15 = 24$

Find the value of  $x$ .

7.  $3(3+x) = 2(2+10)$   
 $9+3x = 2(12)$   
 $9+3x = 24$   
 $3x = 15$   
 $x = 5$

8.  $5(5+3) = 4(4+x)$   
 $5(8) = 16+4x$   
 $40 = 16+4x$   
 $24 = 4x$   
 $6 = x$

8.  $6(6+4) = 5(5+x)$   
 $6(10) = 25+5x$   
 $60 = 25+5x$   
 $35 = 5x$   
 $7 = x$

Find RT and TV.

10.  $8(8+x+3) = 10(10+x-3)$   
 $8(11+x) = 10(7+x)$   
 $88+8x = 70+10x$   
 $18 = 2x$   
 $9 = x$

$RT \rightarrow 9+3+8 = 20$   
 $TV \rightarrow 10+9-3 = 16$

11.  $21(29+2x) = 27(27+x)$   
 $609+42x = 729+27x$   
 $15x = 120$   
 $x = 8$

$RT \rightarrow 2(8)+8+21 = 45$   
 $TV \rightarrow 27+8 = 35$

12.  $15(15+3x) = 20(20+x)$   
 $225+45x = 400+20x$   
 $25x = 175$   
 $x = 7$

$RT \rightarrow 3(7)+15 = 36$   
 $TV \rightarrow 20+7 = 27$

Find the value of  $x$ .

13.  $10^2 = 5(5+x)$   
 $100 = 25+5x$   
 $75 = 5x$   
 $15 = x$

14.  $x^2 = 9(16)$   
 $x^2 = 144$   
 $x = 12$

15.  $15^2 = 9(9+4x)$   
 $225 = 81+36x$   
 $144 = 36x$   
 $4 = x$

Find PQ.

16.  $x^2 = 12(12+15)$   
 $x^2 = 12(27)$   
 $x^2 = 324$   
 $x = 18 \leftarrow PQ$

17.  $36^2 = 24(24+x)$   
 $1296 = 576+24x$   
 $720 = 24x$   
 $30 = x \leftarrow PQ$

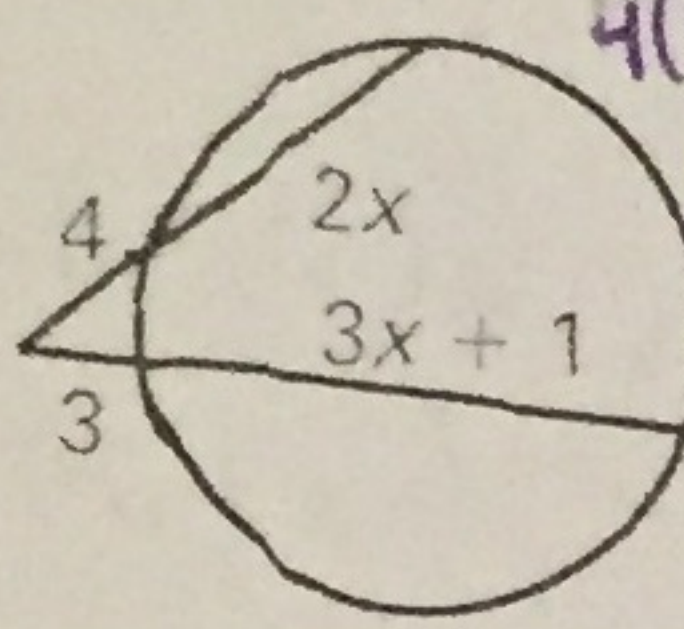
18.  $70^2 = x(x+48)$   
 $4900 = x^2+48x$   
 $0 = x^2+48x-4900$   
 $0 = (x+98)(x-50)$

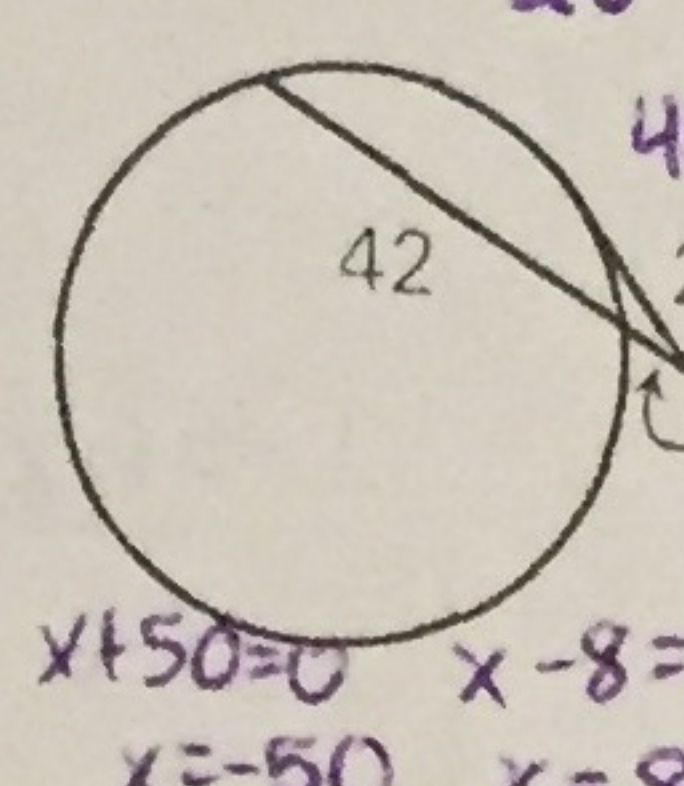
$x = 50$   
- LONG STORY -  
I'll explain tomorrow

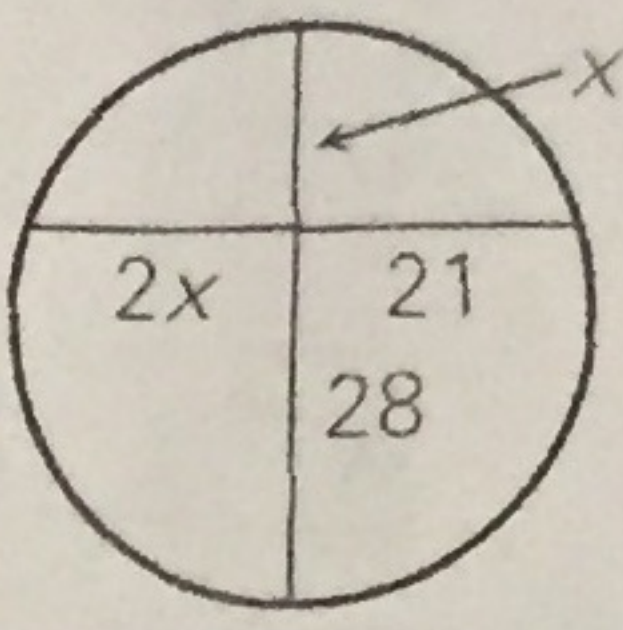
UNIT 6

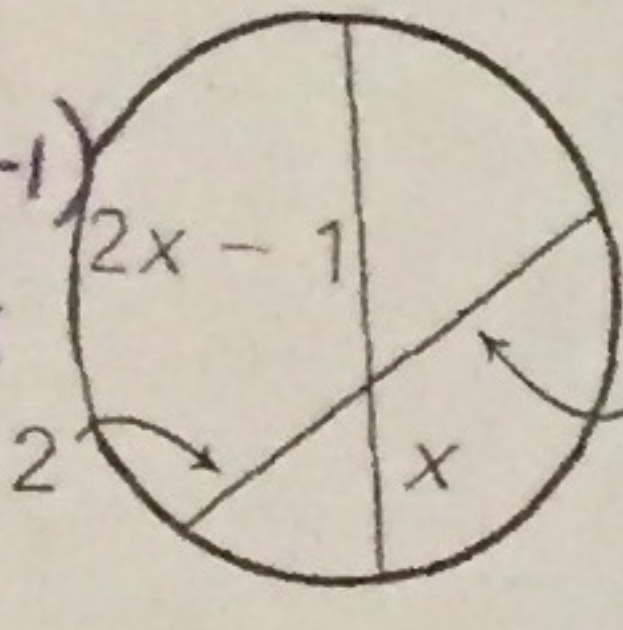
# Exercise Set A (continued)

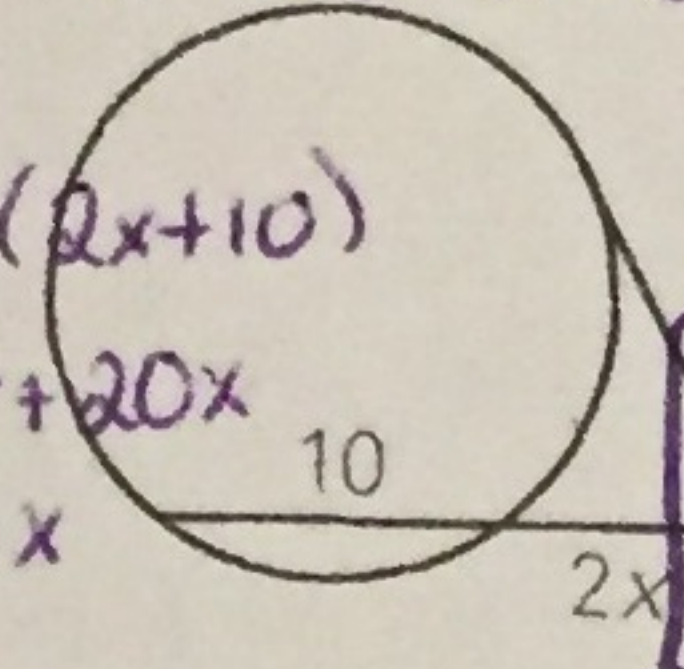
Find the value of  $x$ .

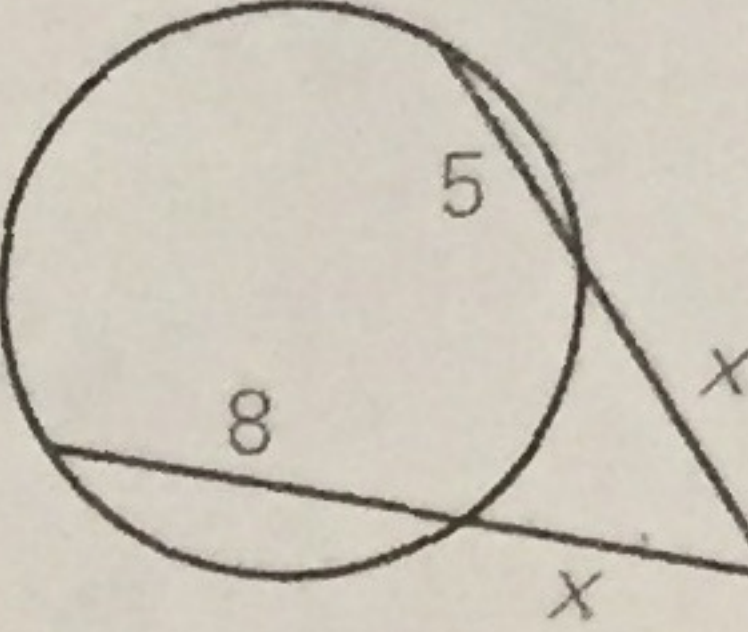
19.   $4(4+2x) = 3(3x+1)$   
 $16+8x = 9x+3$   
 $13 = x$

20.   $20^2 = x(x+42)$   
 $400 = x^2 + 42x$   
 $0 = x^2 + 42x - 400$   
 $0 = (x+50)(x-8)$   
 $x+50=0$   $x-8=0$   
 $x=-50$   $x=8$   
 $x=8$  (need the positive answer)

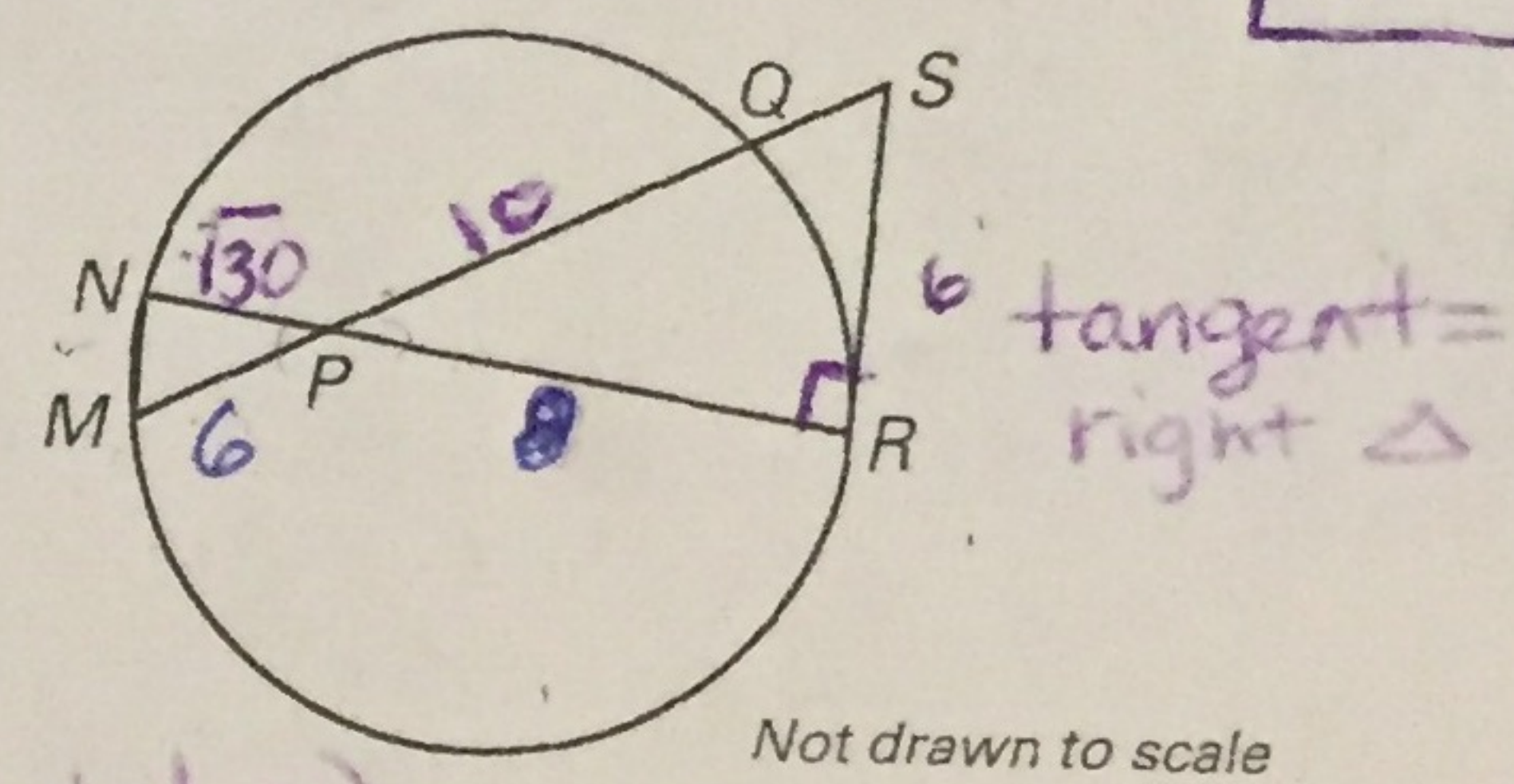
21.   $28(x+5) = 2x(21)$   
 $28x + 140 = 42x$   
 $140 = 14x$   
 $10 = x$

22.   $(x+2)(2x-4) = x(2x-1)$   
 $2x^2 - 8 = 2x^2 - x$   
 $-8 = -x$   
 $8 = x$

23.   $(3x)^2 = 2x(2x+10)$   
 $9x^2 = 4x^2 + 20x$   
 $5x^2 = 20x$   
 $x=8$  (DON'T DO)

24.   $x(x+8) = (x+1)(x+6)$   
 $x^2 + 8x = x^2 + 7x + 6$   
 $8x = 7x + 6$   
 $x = 6$

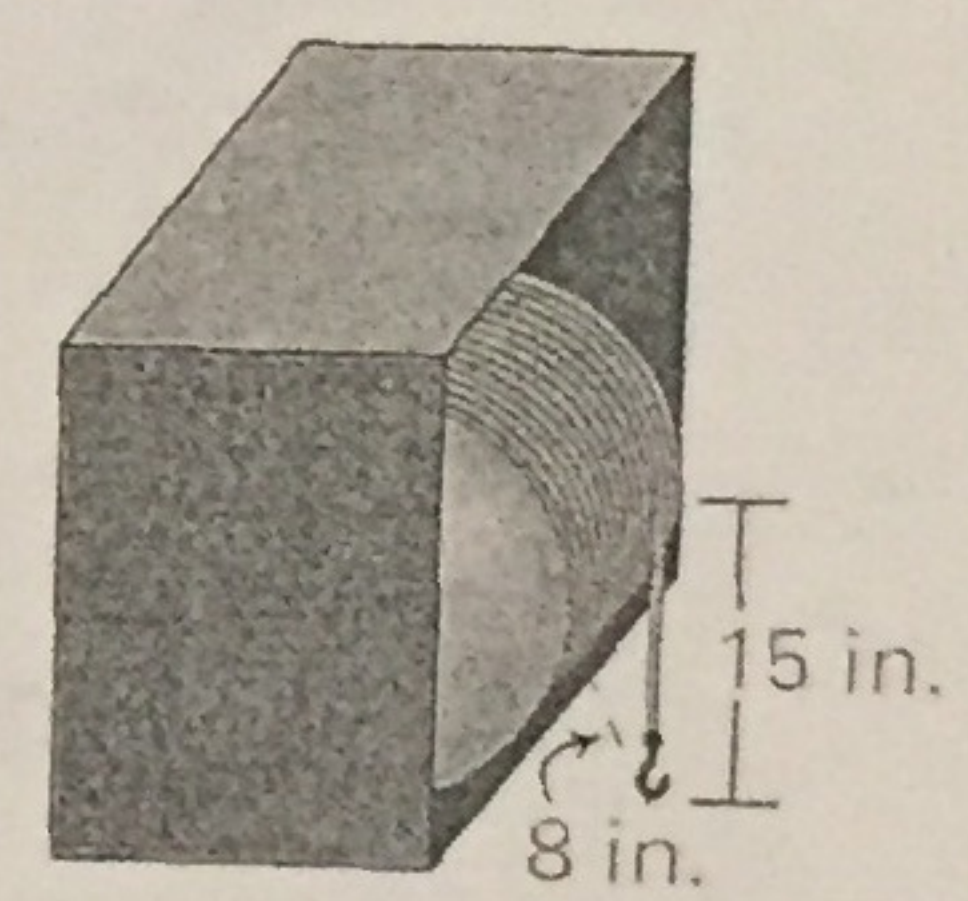
25. In the diagram,  $\overline{RS}$  is a tangent segment,  $MP = 6$ ,  $NP = \sqrt{30}$ ,  $QP = 10$ , and  $RS = 6$ . Show that  $\triangle MNP \sim \triangle SRP$ .



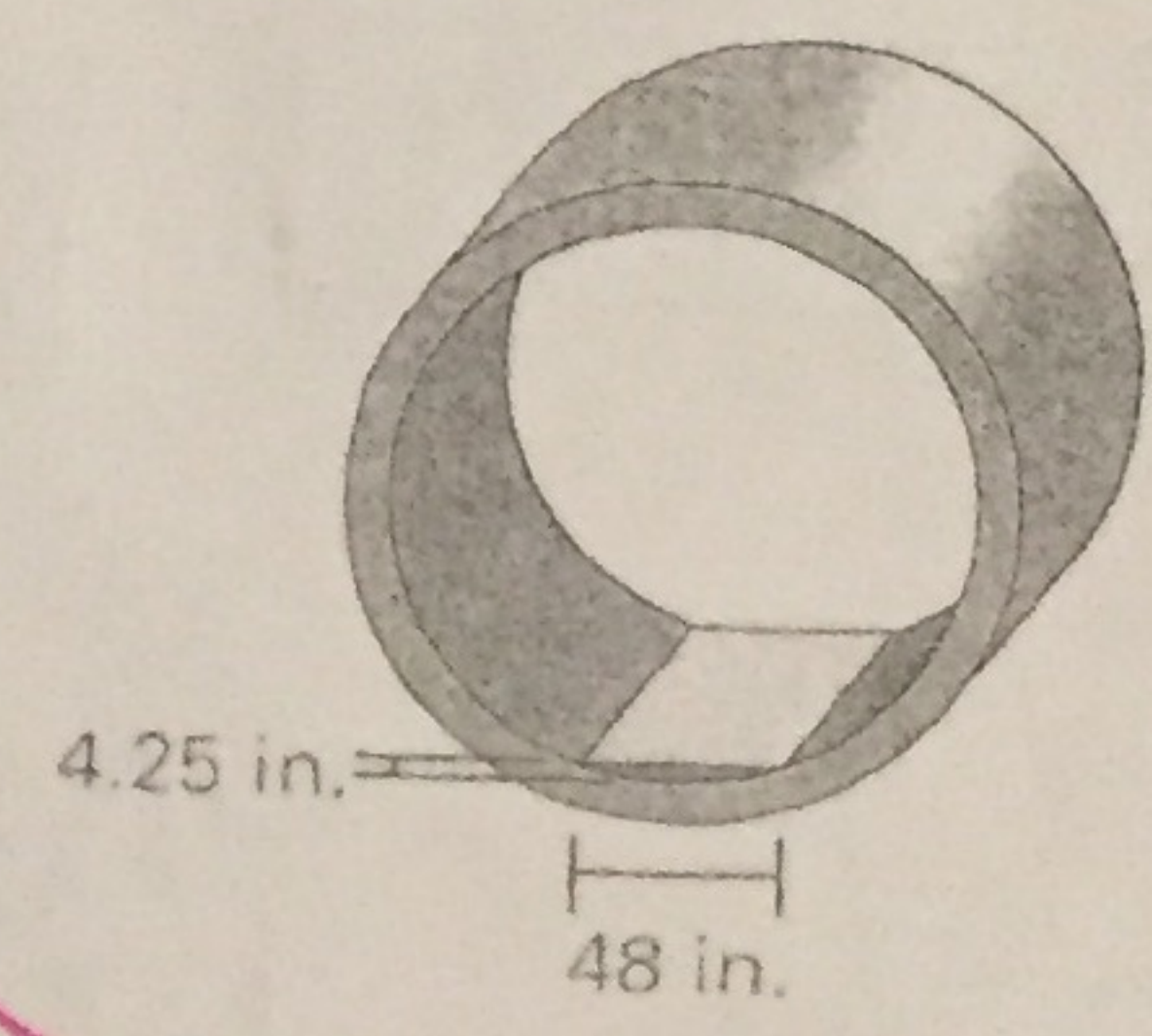
[Don't Do]

- involves math we haven't learned (advanced algebra)

26. Winch A large industrial winch is enclosed as shown. There are 15 inches of the cable hanging free off of the winch's spool and the distance from the end of the cable to the spool is 8 inches. What is the diameter of the spool?



27. Storm Drain The diagram shows a cross-section of a large storm drain pipe with a small amount of standing water. The distance across the surface of the water is 48 inches and the water is 4.25 inches deep at its deepest point. To the nearest inch, what is the diameter of the storm drain pipe?



28. Basketball The Xs show the positions of two basketball teammates relative to the circular "key" on a basketball court. The player outside the key passes the ball to the player on the key. To the nearest tenth of a foot, how long is the pass?

