

Warm Up

4/30

What are the values of x below? No calculators.

This is asking "what times itself 3 times = ?"

$$x^3 = -1 \quad x = -1$$

$$x^3 = 64 \quad x = 4$$

$$x^3 = 27 \quad x = 3$$

$$x^3 = 1000 \quad x = 10$$

$$x^3 = -8 \quad x = -2$$

If we have: $\sqrt{25} = 5$

$$-\sqrt{25} = -5$$

↗
This is asking
what times itself
equals 25

Above, we have "cube roots", what times itself
3 times...

Instead of asking what is the value of x for $x^3 = 27$

↗ $\sqrt[3]{27} = 3$

cube root

$$\sqrt[3]{8} = 2$$

$$\sqrt[3]{125} = 5$$

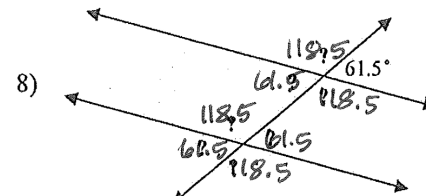
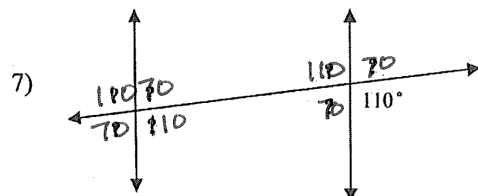
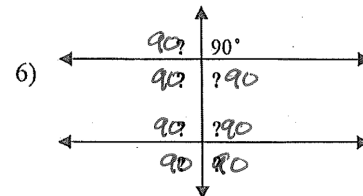
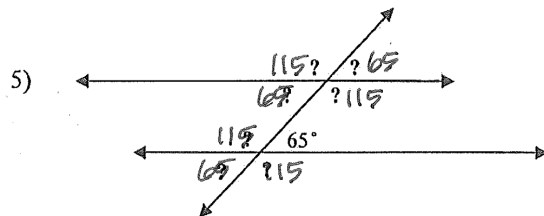
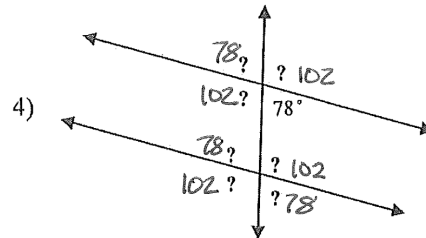
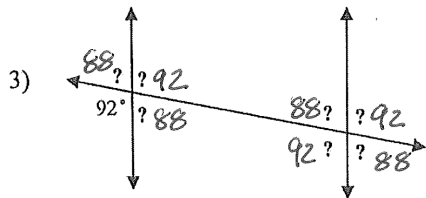
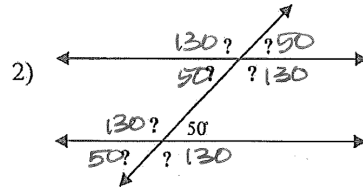
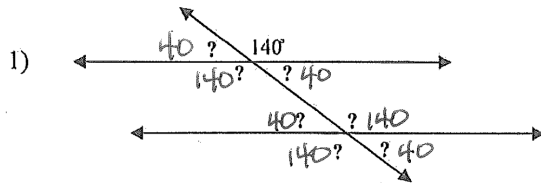
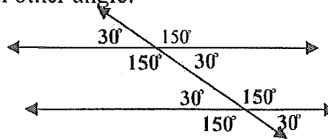
$$5 \cdot 5 = 25$$

$$25 \cdot 5 = 125$$

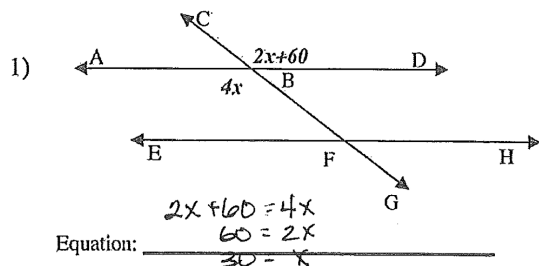
Homework Questions?

Directions: For each set of parallel lines, you are given the measure of one angle. Use your knowledge of parallel lines and transversals to find the measures of each other angle.

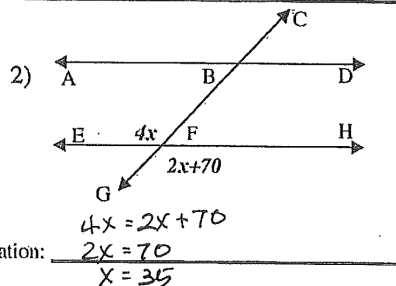
Example: Given an angle of 150°



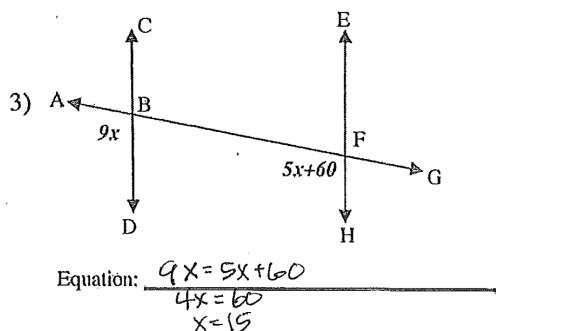
Directions: Find the measure of each missing angle in the parallel lines and transversals below. Each pair of angles are either *vertical angles*, *alternate angles*, or *corresponding angles*; so they are congruent. All you have to do is set up and solve an equation where the expressions are congruent. Once you've solved for x , plug that value back into each expression to find the measure of each angle.



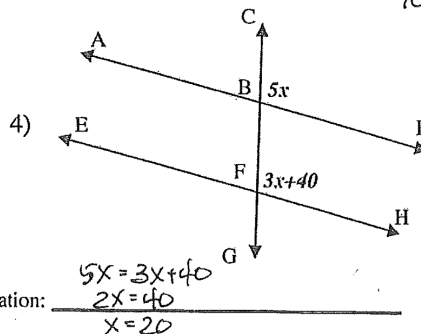
$x = 30^\circ$ $\angle ABG = 120^\circ$ $\angle CBD = 120^\circ$
 $4(30) = 120$ $2(30) + 60$
 $60 + 60$



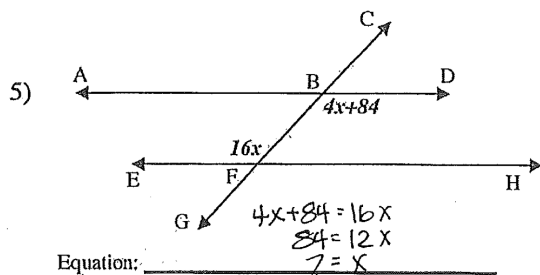
$x = 35^\circ$ $\angle EFB = 140^\circ$ $\angle GFH = 140^\circ$
 $4(35) = 140$ $2(35) + 70$
 $70 + 70$



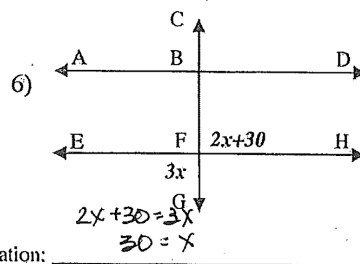
$x = 15^\circ$ $\angle ABD = 135^\circ$ $\angle HFA = 135^\circ$
 $9(15) = 135$ $5(15) + 60$
 $75 + 60$



$x = 20^\circ$ $\angle CBD = 100^\circ$ $\angle HFC = 100^\circ$
 $5(20) = 100$ $3(20) + 40$
 $60 + 40$



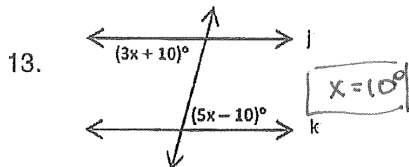
$x = 7^\circ$ $\angle GBD = 112^\circ$ $\angle EFC = 112^\circ$
 $4(7) + 84$ $16(7) = 112$
 $28 + 84$



$x = 30^\circ$ $\angle EFG = 90^\circ$ $\angle HFC = 90^\circ$
 $2(30) + 30$ $3(30) = 90$
 $60 + 30$

Find the value of x that makes $j \parallel k$.

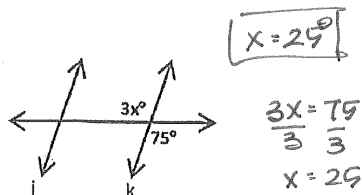
j is parallel to k



$$\begin{array}{r} 3x + 10 = 5x - 10 \\ -3x \quad -3x \\ \hline 10 = 2x - 10 \\ +10 \quad +10 \\ \hline 20 = 2x \\ \frac{20}{2} = \frac{2x}{2} \\ 10 = x \end{array}$$

$$x = 10^\circ$$

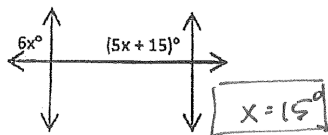
14.



$$x = 25^\circ$$

$$\begin{array}{r} 3x = 75 \\ \frac{3x}{3} = \frac{75}{3} \\ x = 25 \end{array}$$

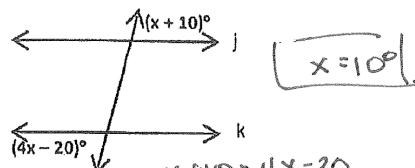
15.



$$\begin{array}{r} 6x = 5x + 15 \\ -5x \quad -5x \\ \hline x = 15 \end{array}$$

$$x = 15^\circ$$

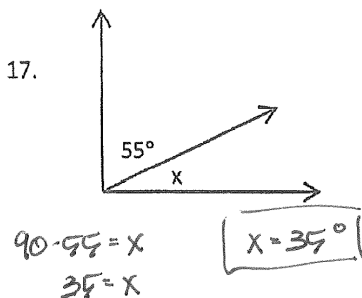
16.



$$x = 10^\circ$$

$$\begin{array}{r} x + 10 = 4x - 20 \\ -x \quad -x \\ \hline 10 = 3x - 20 \\ +20 \quad +20 \\ \hline 30 = 3x \\ \frac{30}{3} = \frac{3x}{3} \\ 10 = x \end{array}$$

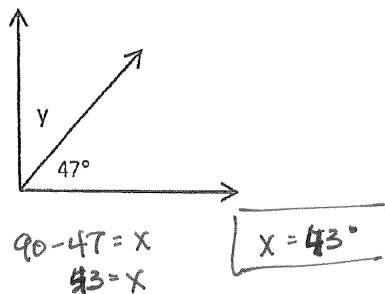
Determine the missing angles.



$$\begin{array}{r} 90 - 55 = x \\ 35 = x \end{array}$$

$$x = 35^\circ$$

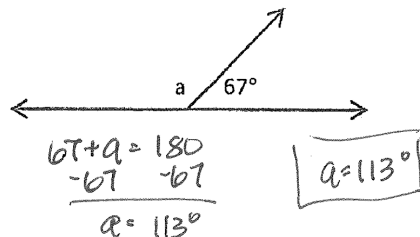
18.



$$\begin{array}{r} 90 - 47 = x \\ 43 = x \end{array}$$

$$x = 43^\circ$$

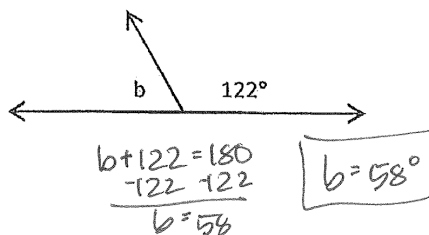
19.



$$\begin{array}{r} 67 + a = 180 \\ -67 \quad -67 \\ \hline a = 113 \end{array}$$

$$a = 113^\circ$$

20.



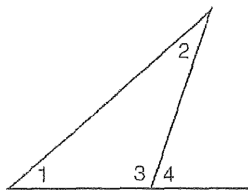
$$\begin{array}{r} b + 122 = 180 \\ -122 \quad -122 \\ \hline b = 58 \end{array}$$

$$b = 58^\circ$$

Exterior Angle Theorem

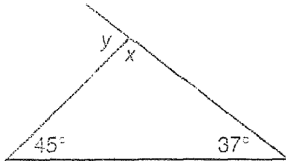
In any triangle, the measure of one exterior angle is equal to the sum of its remote interior angles.

An exterior angle and its adjacent interior angle are supplementary.



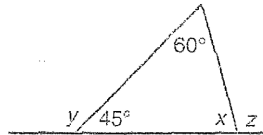
$$\begin{aligned}\angle 1 + \angle 2 &= \angle 4 \\ \angle 3 + \angle 4 &= 180^\circ \\ \angle 1 + \angle 2 + \angle 3 &= 180^\circ\end{aligned}$$

1.



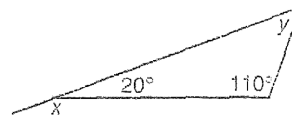
$$\begin{aligned}x &= 98^\circ & y &= 82^\circ \\ x + 45 + 37 &= 180 & x + y &= 180 \\ x + 82 &= 180 & 98 + y &= 180 \\ x &= 98 & y &= 82\end{aligned}$$

2.



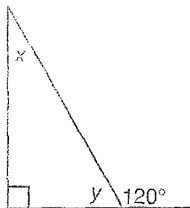
$$\begin{aligned}x &= 75^\circ & y &= 135^\circ \\ z &= 105^\circ & y + 45 &= 180 \\ 60 + 45 + x &= 180 & y &= 135 \\ 105 + x &= 180 & x + z &= 180 \\ x &= 75 & 75 + z &= 180 \\ & & z &= 105\end{aligned}$$

3.



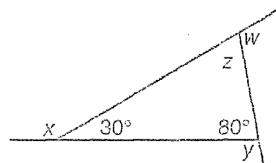
$$\begin{aligned}x &= 160^\circ & y &= 50^\circ \\ 20 + 110 + y &= 180 & x + 20 &= 180 \\ 130 + y &= 180 & x &= 160 \\ y &= 50\end{aligned}$$

4.



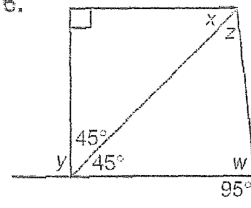
$$\begin{aligned}x &= 30^\circ & y &= 60^\circ \\ x + y + 90 &= 180 & y + 120 &= 180 \\ x + (60) + 90 &= 180 & y &= 60 \\ x + 150 &= 180 \\ x &= 30\end{aligned}$$

5.



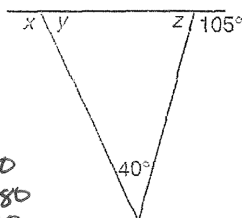
$$\begin{aligned}w &= 110^\circ & x &= 150^\circ \\ y &= 100^\circ & z &= 70^\circ \\ y + 80 &= 180 & x + 30 &= 180 \\ y &= 100 & x &= 150 \\ w + z &= 180 & 30 + 80 + z &= 180 \\ w + 70 &= 180 & 110 + z &= 180 \\ w &= 110 & z &= 70\end{aligned}$$

6.



$$\begin{aligned}w &= 85^\circ & x &= 45^\circ \\ y &= 90^\circ & z &= 50^\circ \\ w + 95 &= 180 & x + 90 + 45 &= 180 \\ w &= 85 & x + 135 &= 180 \\ y + 45 + 45 &= 180 & x &= 45 \\ y + 90 &= 180 & 45 + w + z &= 180 \\ y &= 90 & 45 + 85 + z &= 180 \\ & & 130 + z &= 180 \\ & & z &= 50\end{aligned}$$

7.

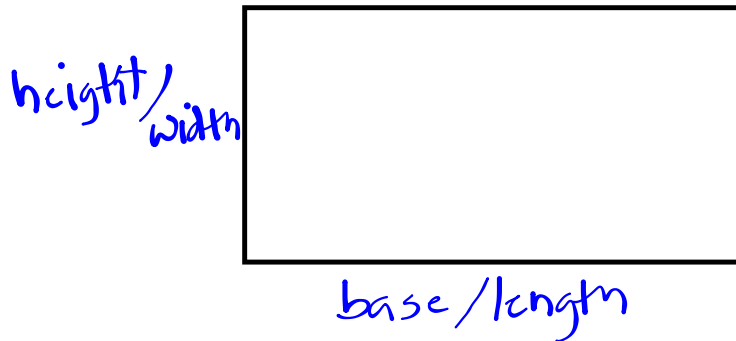


$$\begin{aligned}y + z + 40 &= 180 \\ y + (75) + 40 &= 180 \\ y + 115 &= 180 \\ y &= 65\end{aligned}$$

$$\begin{aligned}x &= 115^\circ & y &= 65^\circ \\ z &= 75^\circ & x + y &= 180 \\ z + 105 &= 180 & x + 65 &= 180 \\ z &= 75 & x &= 115\end{aligned}$$

Measurement

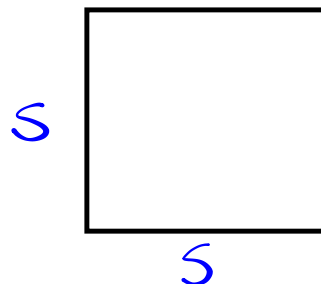
Area of a Rectangle/Square



$$A = b \cdot h$$

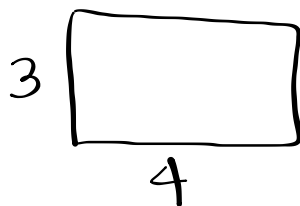
also

$$A = L \cdot W$$



$$A = s^2$$

What is the area?



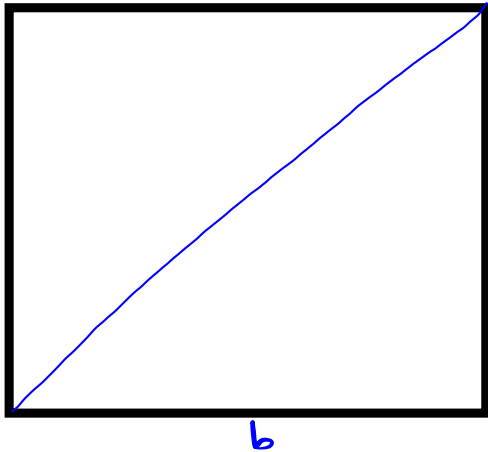
$$A = wL$$

$$A = 3 \cdot 4$$

$$A = 12 \text{ u}^2$$

Expected
Format for
solving for
area

Area of a Triangle

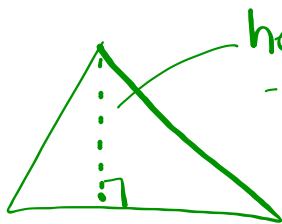


Why do you think the formula for the area of a triangle is:

$$A = \frac{1}{2} b \cdot h$$

A triangle is half of a rectangle

How to find height:



height

- goes from top of triangle

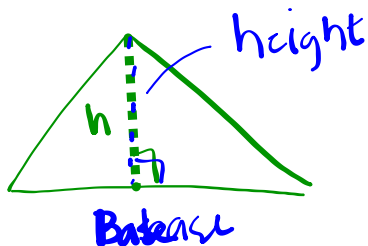
to the base, height

- Always perpendicular to the base.

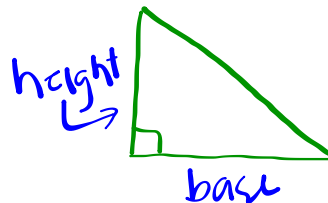
(right angle)

Examples

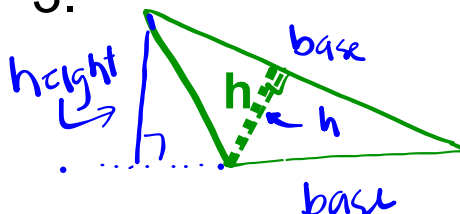
1.



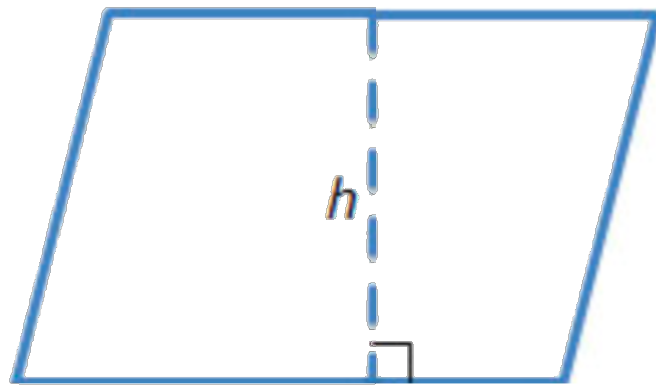
2. 2.



3.



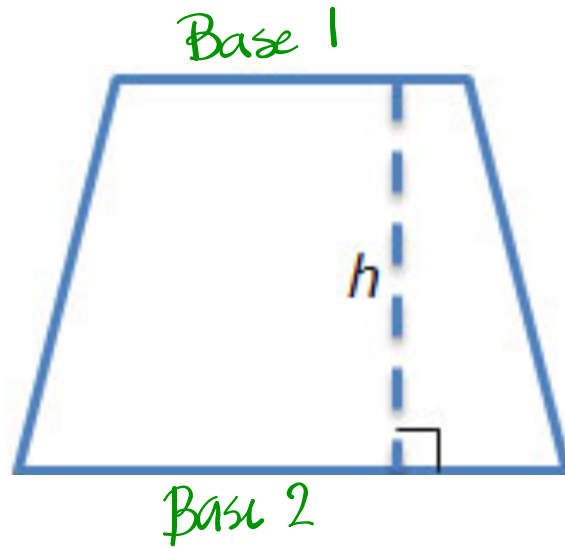
Area of a Parallelogram



Base

$$A = b \cdot h$$

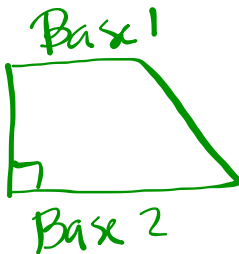
Area of a Trapezoid



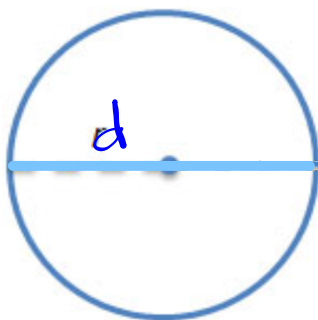
- 2 bases
- parallel to each other
- unequal lengths

$$A = \frac{1}{2} h (b_1 + b_2)$$

base 1 base 2

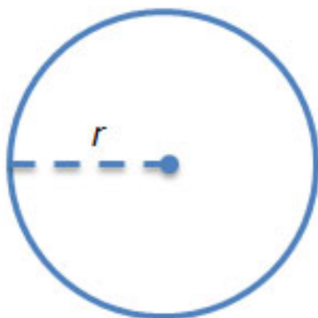


Circles



$2r = \text{diameter}$

$$d = 2r$$



$$A = \pi r^2$$

3.14 Use π button

$$C = 2\pi r$$

Circumference
(perimeter of a
circle)

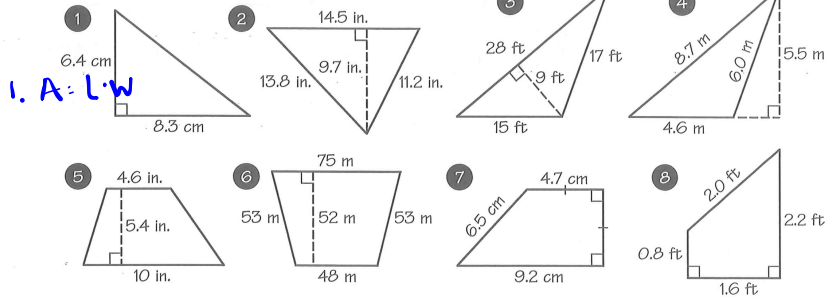
Classwork

What Did the Scientist Say to the Hydrogen Atom That Claimed to Have Lost an Electron?

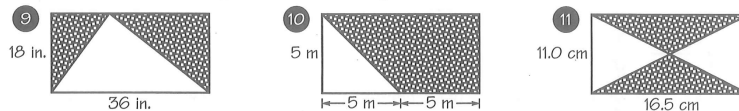
Cross out the letters above each correct answer (some are rounded). When you finish, write the remaining letters in the spaces at the bottom of the page.



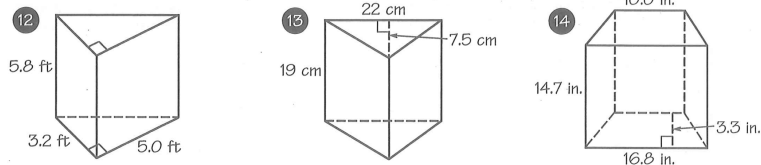
Find the area of the triangle or trapezoid.



Find the area of the shaded region inside each rectangle.



Find the area of the base of each prism.

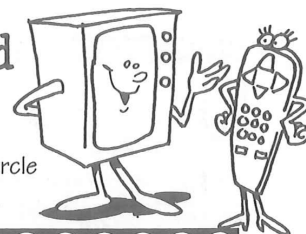


ST 8 ft ²	AT 3198 m ²	OM 126 ft ²	AR 6.8 ft ²	CH 2.4 ft ²	TH 44.2 in. ²	EY 86.5 cm ²
IF 37.5 m ²	OU 333 in. ²	ND 26.6 cm ²	TO 82.5 cm ²	PO 41.6 in. ²	LE 70.3 in. ²	AN 32.7 cm ²
SI 29.4 cm ²	TA 324 in. ²	KE 39.4 in. ²	TI 36.3 m ²	LO 90.8 cm ²	VE 3245 m ²	ME 12.7 m ²

Strategies for calculating the shaded area in #10:

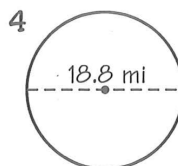
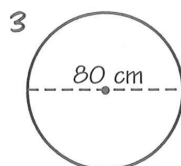
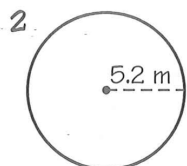
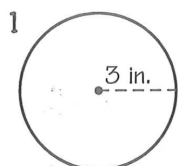
1. Split the figure in half and calculate area of a square and a triangle, and add them together.
2. Calculate the area of the shaded area directly since it is a trapezoid.
3. Calculate the area of the large rectangle and subtract the area of the white triangle.

What Happened When the TV Set Asked the Remote Control for a Date?



Find each answer in the answer column. Write the letter of the answer in the circle that contains the exercise number. Most answers are rounded. Use 3.14 for π .

Use the diameter (d) or radius (r) to find the area.



5 $r = 12$ in.

6 $r = 0.66$ mi

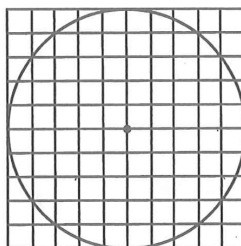
7 $d = 7.5$ m.

8 $d = 2$ cm

Solve.

- 9 Radio station KLVV broadcasts in all directions to a distance of 60 mi. What is the area over which the station can be heard?

- 10 How many squares are inside the circle below?

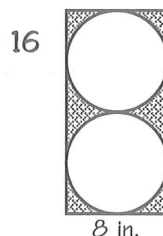
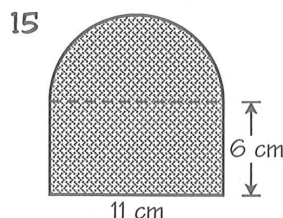
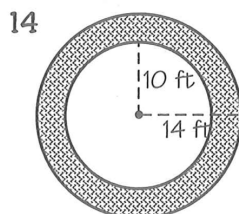


- 11 A fugitive has escaped in a train wreck. The police believe he could not have traveled more than 7 mi in any direction from the wreck. How many square miles must be searched?

- 12 A manhole cover has a diameter of 3 ft. It weighs 8.2 lb per square foot. How much does the manhole cover weigh?

- 13 A 12-inch diameter pizza is cut into 8 equal pieces. What is the area of each piece?

Find the area of the shaded region.



Answers 1-8

- L 269.4 mi²
- O 5024 cm²
- S 44.2 m²
- D 28.3 in.²
- F 1.54 mi²
- M 452.2 in.²
- T 5196 cm²
- E 84.9 m²
- H 3.14 cm²
- A 48.3 m²
- U 1.37 mi²
- Y 438.3 in.²
- N 277.5 mi²

Answers 9-16

- S 124.3 cm²
- H 153.9 mi²
- A 62.4 lb
- T 301.4 ft²
- F 18.9 in.²
- E 78.5
- I 57.9 lb
- D 113.5 cm²
- L 82.4
- W 11,304 mi²
- R 27.5 in.²
- B 326.4 ft²
- N 14.1 in.²
- O 9285 mi²

7

11

2

14

6

16

4

10

1

8

12

5

15

3

9

13

Homework

Finish classwork