

Geometry

1) John parks his car in the lot with 7 other cars. Lightning strikes a car in the parking lot. What is the probability that it was John's car that was struck?

Number of cars you are interested in : 1

Total number of cars: 8

Probability:  $1/8 = .125 = 12.5\%$

A stained glass window has eighteen panes. Four are red, five are blue, seven are gold, and two are orange. A little boy hits a baseball through one of the panes.

2) What is the probability the pane is red?

Number you are interested in: 4

Total number of panes:  $4+5+7+2 = 18$

Probability:  $4/18 = 2/9 = .222 = 22.2\%$

3) What is the probability the pane is blue?

Number you are interested in: 5

Total number of panes:  $4+5+7+2 = 18$

Probability:  $5/18 = .278 = 27.8\%$

4) What is the probability the pane is gold?

Number you are interested in: 7

Total number of panes:  $4+5+7+2 = 18$

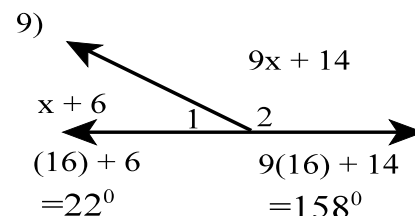
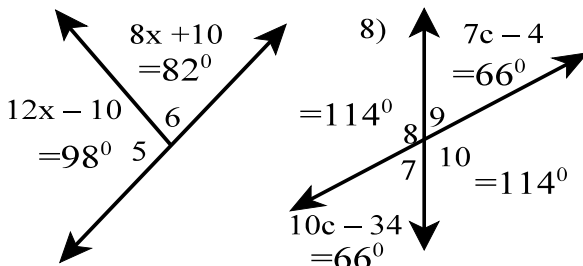
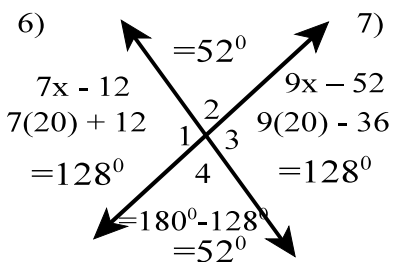
Probability:  $7/18 = .389 = 38.9\%$

5) What is the probability the pane is orange?

Number you are interested in: 2

Total number of panes:  $4+5+7+2 = 18$

Probability:  $2/18 = 1/9 = .111 = 11.1\%$



Find the measures of all of the angles.

$$7x - 12 = 9x - 52$$

$$-7x + 52 \quad -7x + 52$$

$$\underline{40 = 2x}$$

$$2 \quad 2$$

$$\boxed{20 = x}$$

$$12x - 10 + 8x + 10 = 180$$

$$\underline{20x = 180}$$

$$20 \quad 20$$

$$\boxed{x = 9}$$

$$x + 6 + 9x + 14 = 180$$

$$10x + 20 = 180$$

$$-20 \quad -20$$

$$\underline{10x = 160}$$

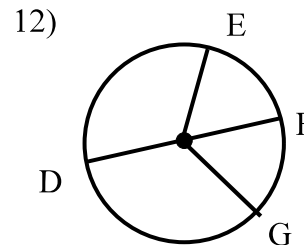
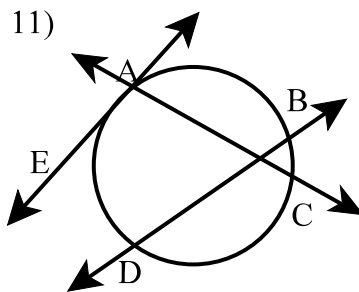
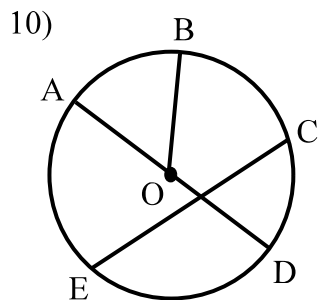
$$10 \quad 10$$

$$\boxed{x = 16}$$

Identify radii, chords, and diameters.

Identify tangents and secants.  
semi-circles.

Identify major and minor arcs and



Radii:  $\overline{AO}$ ,  $\overline{DO}$ ,  $\overline{BO}$

Chords:  $\overline{AD}$ ,  $\overline{EC}$

Diameter:  $\overline{AD}$

Tangent:  $\overline{EA}$

Secants:  $\overline{AC}$ ,  $\overline{DB}$

Major Arcs:  $\widehat{EFD}$ ,  $\widehat{EDG}$

Minor Arcs:  $\widehat{DE}$ ,  $\widehat{EF}$ ,  $\widehat{FG}$ ,  $\widehat{GD}$

Semi-circles:  $\widehat{DEF}$ ,  $\widehat{DGF}$

Given one measure in a circle, find the missing measures. (Give circumference and area in both forms.)

13)  $r = 13 \text{ m}$

14)  $r = 10 \text{ cm}/2$

15)  $r = \frac{(15)}{2} = 7.5 \text{ in}$

16)  $r = \frac{18.5 \text{ ft}}{2} = 9.3 \text{ ft}$

$d = 2(13 \text{ m})$   
 $= 26 \text{ m}$

$d = \frac{10\pi \text{ cm}}{\pi}$   
 $= 10 \text{ cm}$

$d = 15 \text{ in}$

$d = \frac{58 \text{ ft}}{\pi} = 18.5 \text{ ft}$

$C = 26\text{m} (\pi)$   
 $= 26\pi \text{ m}$   
 $= 81.7 \text{ m}$

$C = 10\pi \text{ cm}$

$C = 15\text{m} (\pi)$   
 $= 15\pi \text{ in}$   
 $= 47.1 \text{ in}$

$C = 58 \text{ ft}$

$A = \pi r^2$   
 $= \pi(13 \text{ m})^2$   
 $= 169\pi \text{ m}^2$   
 $= 530.9 \text{ m}^2$

$A = \pi r^2$   
 $= \pi(5 \text{ cm})^2$   
 $= 25\pi \text{ cm}^2$   
 $= 78.5 \text{ m}^2$

$A = \pi r^2$   
 $= \pi(7.5 \text{ in})^2$   
 $= 56.3\pi \text{ in}^2$   
 $= 176.9 \text{ in}^2$

$A = \pi r^2$   
 $= \pi(9.3 \text{ ft})^2$   
 $= 86.5\pi \text{ ft}^2$   
 $= 271.7 \text{ ft}^2$

Use the Pythagorean Theorem to identify each triangle as acute, right or obtuse.

17) 15, 12, 5

$5^2 + 12^2 = 15^2 ?$   
 $169 < 225$

Obtuse

18) 7, 25, 24

$7^2 + 24^2 = 25^2 ?$   
 $625 = 625$

Right

19) 20, 29, 25

$20^2 + 25^2 = 29^2 ?$   
 $1,025 > 841$

Acute

20) 28, 45, 53

$28^2 + 45^2 = 53^2 ?$   
 $2809 = 2809$

Right

21) 16, 55, 65

$16^2 + 55^2 = 65^2 ?$   
 $3281 < 4225$

Obtuse

22) 35, 42, 12

$12^2 + 35^2 = 42^2 ?$   
 $1369 < 1734$

Obtuse

The ratio of black cars to white cars in the school parking lot is 3:5.

23) If there are 57 black cars, how many white cars are there?

$$\frac{3 \text{ black}}{5 \text{ white}} = \frac{57 \text{ black}}{x}$$

$$\frac{3x = 285}{3 \quad 3}$$

$$x = 95 \text{ White Cars}$$

24) If there are 65 white cars, how many black cars are there?

$$\frac{3 \text{ black}}{5 \text{ white}} = \frac{x}{65 \text{ white}}$$

$$\frac{5x = 195}{5 \quad 5}$$

$$x = 39 \text{ Black Cars}$$

The ratio of latino students to polynesian students is 7:4.

25) If there are 56 polynesian students, how many latino students are there?

$$\frac{7 \text{ latino}}{4 \text{ poly}} = \frac{x}{56 \text{ poly}}$$

$$\frac{4x = 392}{4 \quad 4}$$

$$x = 98 \text{ latino}$$

26) If there are 63 latino students, how many polynesian students are there?

$$\frac{7 \text{ latino}}{4 \text{ poly}} = \frac{63 \text{ poly}}{x}$$

$$\frac{7x = 252}{7 \quad 7}$$

$$x = 36 \text{ polynesian}$$

Refer to the circles at the right to find the length of the indicated arc.

27)  $\widehat{BC}$

$$\frac{90^\circ}{360^\circ} = \frac{x}{60m}$$

$$x = 20 \text{ m}$$

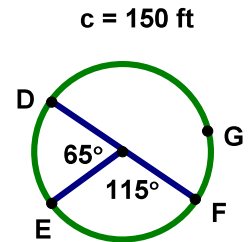
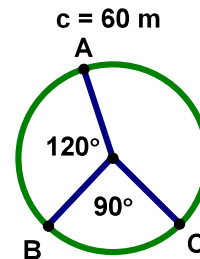
28)  $\widehat{AB}$

29)  $\widehat{EF}$

$$\frac{115^\circ}{360^\circ} = \frac{x}{150ft}$$

$$\frac{17,250 = 360^\circ x}{360^\circ \quad 360^\circ}$$

$$x = 47.9 \text{ ft}$$



$$\frac{5,400 = 360^\circ x}{360^\circ \quad 360^\circ}$$

$$15 \text{ m} = x$$

30)  $\widehat{DE}$

$$\frac{65^\circ}{360^\circ} = \frac{x}{150ft}$$

$$\frac{9,750 = 360^\circ x}{360^\circ \quad 360^\circ}$$

$$x = 27.1 \text{ ft}$$

31)  $\widehat{AC}$

$$\frac{150^\circ}{360^\circ} = \frac{x}{60m}$$

$$\frac{9,000 = 360^\circ x}{360^\circ \quad 360^\circ}$$

$$x = 25 \text{ m}$$

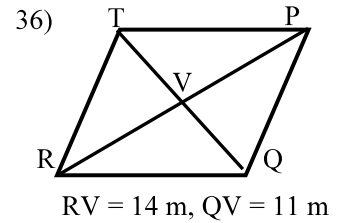
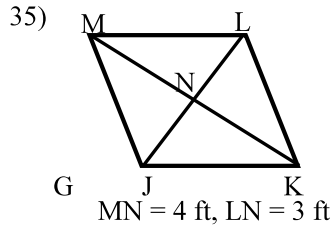
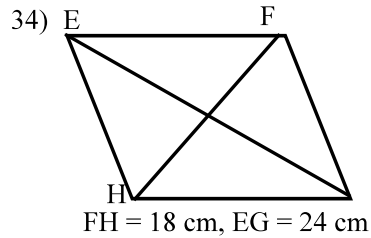
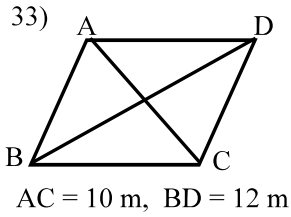
32)  $\widehat{DGF}$

$$\frac{180^\circ}{360^\circ} = \frac{x}{150ft}$$

$$\frac{27,000 = 360^\circ x}{360^\circ \quad 360^\circ}$$

$$x = 75 \text{ ft}$$

Find the area of each rhombus.



$$A = \frac{d_1 \cdot d_2}{2}$$

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$$A = \frac{(10\text{m})(12\text{m})}{2}$$

$$A = \frac{(18\text{cm})(24\text{cm})}{2}$$

$$A = \frac{(8\text{ft})(6\text{ft})}{2}$$

$$A = \frac{(28\text{m})(22\text{m})}{2}$$

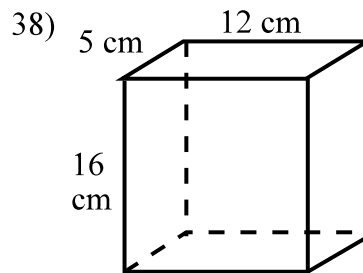
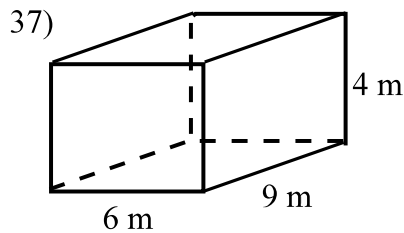
$$A = 60 \text{ m}^2$$

$$A = 216 \text{ cm}^2$$

$$A = 24 \text{ ft}^2$$

$$A = 308 \text{ m}^2$$

Find the surface area and volume of the following figures.



Surface Area =

Bottom -  $(6\text{m})(9\text{m}) = 54 \text{ m}^2$

Top -  $54 \text{ m}^2$

Front -  $(6\text{m})(4\text{m}) = 24 \text{ m}^2$

Back -  $24 \text{ m}^2$

Right -  $(9\text{m})(4\text{m}) = 36 \text{ m}^2$

Left -  $36 \text{ m}^2$

Surface Area =

$$54 + 54 + 24 + 24 + 36 + 36 = 228 \text{ m}^2$$

Volume =

1<sup>st</sup> layer =  $(6\text{m})(9\text{m}) = 54 \text{ m}^2$

$$\begin{array}{r} 54 \text{ m}^2 \\ \times 4 \text{ m of layers} \\ \hline \end{array}$$

$$\text{Volume} = 216 \text{ m}^3$$

Surface Area =

Bottom -  $(5\text{cm})(12\text{cm}) = 60\text{cm}^2$

Top -  $60\text{cm}^2$

Front -  $(16\text{cm})(12\text{cm}) = 192\text{cm}^2$

Back -  $192\text{cm}^2$

Right -  $(5\text{cm})(16\text{cm}) = 80\text{cm}^2$

Left -  $80\text{cm}^2$

Surface Area =

$$60 + 60 + 192 + 192 + 80 + 80 = 664 \text{ cm}^2$$

Volume =

1<sup>st</sup> layer =  $(5\text{cm})(12\text{cm}) = 60\text{cm}^2$

$$\begin{array}{r} 60 \text{ cm}^2 \\ \times 16 \text{ cm of layers} \\ \hline \end{array}$$

$$\text{Volume} = 960 \text{ cm}^3$$