

(KEY)

Geometry Development 5.2

Geometry

During a movie Colin reaches into a bag of M&Ms and takes a single M&M. The bag of M&Ms contains 20 reds, 16 greens, 26 browns, and 34 yellows. Give the answer as a fraction, a decimal, and a percentage.

1) What is the probability the M&M is red?

$$\frac{20}{20 + 16 + 26 + 34} = \frac{20}{96} = 0.21 = 21\%$$

2) What is the probability the M&M is brown?

$$\frac{26}{20 + 16 + 26 + 34} = \frac{26}{96} = .27 = 27\%$$

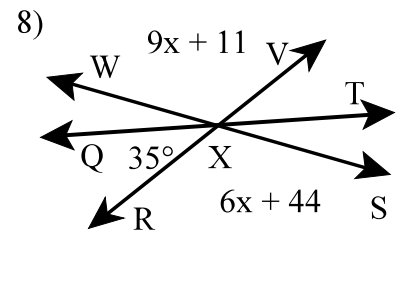
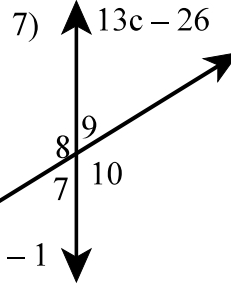
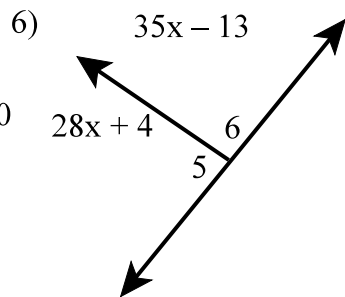
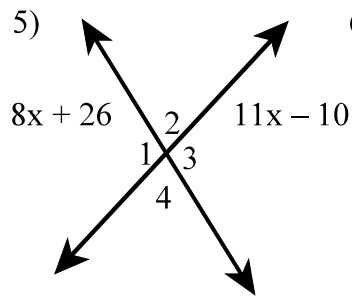
3) What is the probability the M&M is yellow?

$$\frac{34}{20 + 16 + 26 + 34} = \frac{34}{96} = .35 = 35\%$$

4) What is the probability the M&M is green?

$$\frac{16}{20 + 16 + 26 + 34} = \frac{16}{96} = .17 = 17\%$$

Find the measures of all of the angles.



$$\begin{aligned} 8x + 26 &= 11x - 10 \\ -8x &\quad -8x \\ 26 &= 3x - 10 \\ +10 &\quad +10 \\ 36 &= 3x \\ \div 3 &\quad \div 3 \end{aligned}$$

$$\begin{aligned} 28x + 4 + 35x - 13 &= 180 \\ 63x - 9 &= 180 \\ +9 &\quad +9 \\ 63x &= 189 \\ \div 63 &\quad \div 63 \end{aligned}$$

$$\begin{aligned} \angle 7 &= 39^\circ \\ \angle 9 &= 39^\circ \\ \angle 8 &= 141^\circ \\ \angle 10 &= 141^\circ \end{aligned}$$

$$\begin{aligned} 9x + 11 &= 6x + 44 \\ -6x &\quad -6x \\ 3x + 11 &= 44 \\ -11 &\quad -11 \\ 3x &= 33 \\ \div 3 &\quad \div 3 \end{aligned}$$

$$12 = x$$

$$x = 3$$

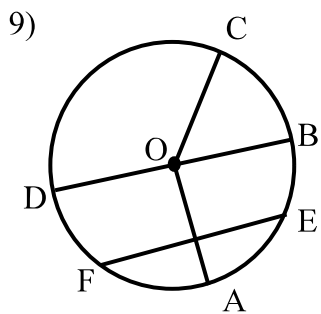
$$x = 11$$

$$\begin{aligned} \angle 1 &= 8(12) + 26 = 122^\circ \\ \angle 3 &= 122^\circ \\ \angle 2 &= 180 - 122 = 58^\circ \\ \angle 4 &= 58^\circ \end{aligned}$$

$$\begin{aligned} \angle 5 &= 28(3) + 4 = 88^\circ \\ \angle 6 &= 35(3) - 13 = 92^\circ \end{aligned}$$

$$\begin{aligned} \angle WXV &= 9(11) + 11 = 110^\circ \\ \angle RXV &= 110^\circ \\ \angle RXQ &= 35^\circ \\ \angle TXV &= 35^\circ \\ \angle SXT &= 180 - 110 - 35 = 35^\circ \\ \angle WXQ &= 35^\circ \end{aligned}$$

Identify radii, chords, and diameters.

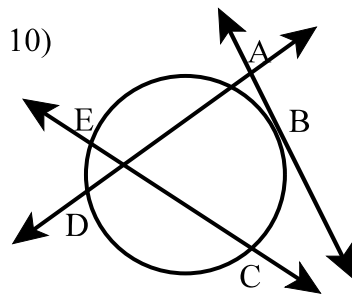


Radii:  $\overline{BO}, \overline{DO}, \overline{AO}, \overline{CO}$

Chords:  $\overline{FE}, \overline{DB}$

Diameter:  $\overline{DB}$

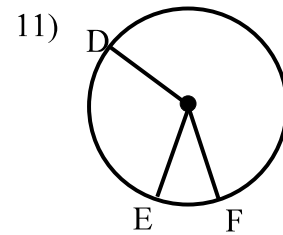
Identify tangents and secants.



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

Tangent:  $\overline{AB}$

Identify major and minor arcs and semi-circles.

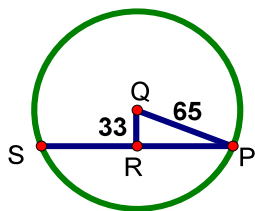


Major:  $\widehat{DFE}, \widehat{EDF}$ ,

Minor:  $\widehat{DE}, \widehat{DF}, \widehat{EF}$

Find the length of each chord.

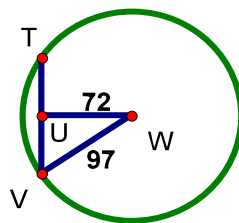
12)



$$\begin{aligned} 33^2 + b^2 &= 65^2 \\ 1089 + b^2 &= 4225 \\ b^2 &= 3136 \\ b &= 56 \end{aligned}$$

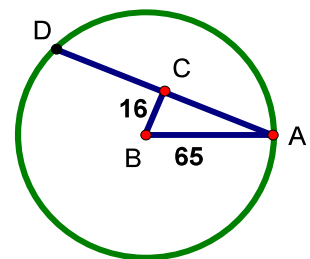
$$\overline{SP} = 2(56) = 112$$

13)



$$\overline{TV} = 130$$

14)



$$\overline{DA} = 126$$

Given one measure in a circle, find the missing measures. (If circumference is missing, give it in both forms.)

15)  $r = 31.5$  mm

16)  $r = 19.6$  mi

17)  $r = 38.5$  km

18)  $r = 38$  ft

$d = 63$  mm

$d = 39.2$  mi

$d = 77$  km

$d = 76$  ft

$C = 63\pi$  mm  
197.9 mm

$C = 123$  mi

$C = 77\pi$  km

$C = 76\pi$  ft  
238.8 ft

The ratio of apple trees to nectarine trees in an orchard is 6:5.

19) If there are 348 apple trees, how many nectarine trees are there?

$$\frac{6_{apple}}{5_{nectarine}} = \frac{348_{apple}}{x}$$

$x = 290$  nectarine trees

20) If there are 560 nectarine trees, how many apple trees are there?

$$\frac{6_{apple}}{5_{nectarine}} = \frac{x}{560_{nectarine}}$$

$x = 672$  apple trees

A chemical solution contains 3 parts acid for every 22 parts water.

21) If there are 51 parts acids, how many parts water are there?

374 Parts Water

22) If there are 814 parts water, how many parts acid are there?

111 Parts acid

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

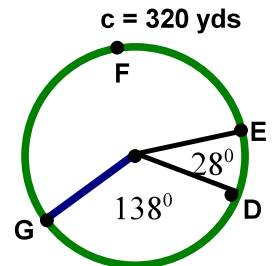
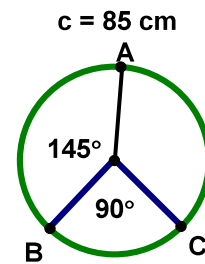
23)  $\widehat{BA}$

24)  $\widehat{DE}$

25)  $\widehat{DG}$

$$\frac{145^\circ}{360^\circ} = \frac{\widehat{BA}}{85cm}$$

$$\widehat{DE} = 24.9 yds$$



$$\widehat{BA} = 34.2cm$$

26)  $\widehat{AC}$

27)  $\widehat{AE}$

28)  $\widehat{DGE}$

$$\widehat{AC} = 29.5cm$$

$$\frac{332^\circ}{360^\circ} = \frac{\widehat{DGE}}{320yds}$$

$$\widehat{DGE} = 295.1yds$$

State the number of lines of symmetry in each figure below. Draw the lines.

29) 0

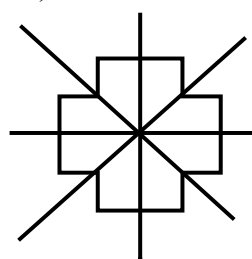
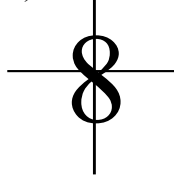
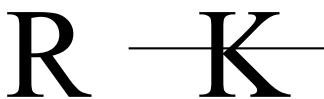
30) 1

31) 1

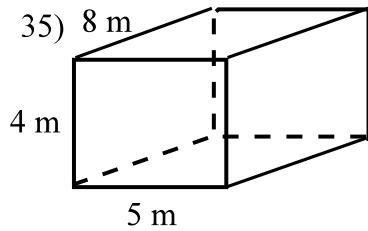
32) 2

33) 4

34) 1



Find the surface area and volume of the following figures.



**Surface Area:**

Front-  $(4\text{m})(5\text{m}) = 20\text{m}^2$

Back-  $20\text{m}^2$

Top-  $(8\text{m})(5\text{m}) = 40\text{m}^2$

Bottom-  $40\text{m}^2$

Right-  $(8\text{m})(4\text{m}) = 32\text{m}^2$

Left-  $32\text{m}^2$

**Surface Area =**

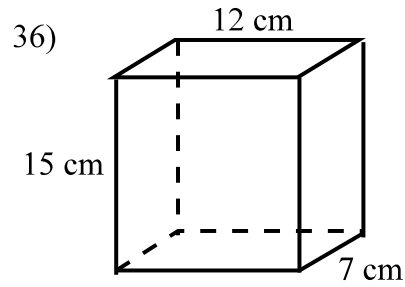
$$(20+20+40+40+32+32)\text{m}^2$$
$$= \underline{184\text{m}^2}$$

**Volume =**

1<sup>st</sup> Layer-  $(5\text{m})(4\text{m}) = 20\text{m}^2$

How Many Layers? 8

$$\underline{\text{Volume- } (20\text{m}^2)(8\text{m}) = 160\text{m}^3}$$



$$\underline{\text{SA} = 738\text{cm}^2}$$

$$\underline{\text{V} = 1260\text{cm}^3}$$