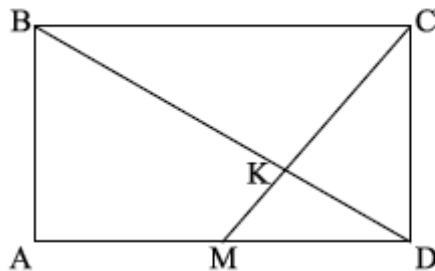


8th Grade Homework #2A

Due Date: February 23, 2014

1.

In rectangle ABCD, $AB = 6$ units.
 $m\angle DBC = 30^\circ$, M is the midpoint of segment AD, and segments CM and BD intersect at point K. We must find the length of segment MK.

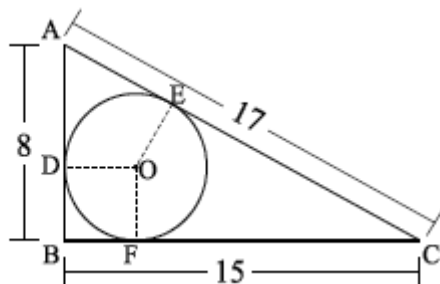


2.

Jack and Jill drove the same distance.
Jill drove 20% faster than Jack and she arrived half an hour earlier. We must find how many hours Jack drove.

3.

A right triangle has sides with lengths 8, 15 and 17. A circle is inscribed in the triangle, as shown, and we must find the radius of the circle.



4.

The diameter of a spherical balloon is increased by 150%. We must find by what percent the volume increases.

5.

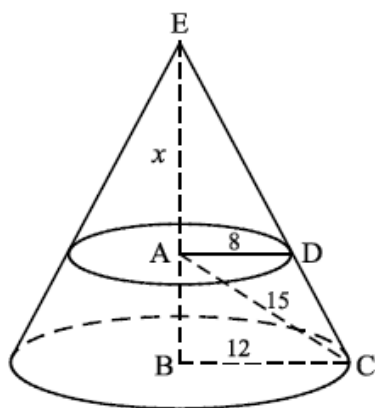
When one integer is removed from a list of 5 integers, the mean of the remaining four integers is 3 less than the mean of the original 5 integers. So what is the positive difference between the mean of the original five integers and the integer that was removed?

6.

A hot-air balloon descends at a constant rate of 15 ft per minute starting from 1200 ft above the ground. A helium-filled balloon is released at a height of 10 ft above the ground. It goes up at a rate of 5 ft per second. We must find how many minutes expire before the two balloons are at the same height.

7.

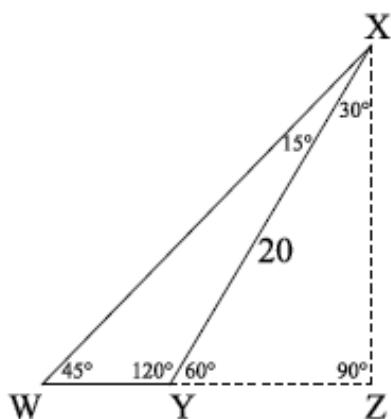
Segments AD and BC are the radii of the top and bottom bases of the frustum. $AD = 8$, $BC = 12$ and $AC = 15$, what is the volume of the frustum?



8.

A triangle has angles measuring 15° , 45° and 120° . The side opposite the 45° angle is 20 units. The area of the

triangle can be expressed as $m - n\sqrt{q}$
and we must find the sum $m + n + q$.



9.

The sum of the first n terms of a sequence, $a_1 + a_2 + \dots + a_n$, is given by the formula $S_n = n^2 + 4n + 8$

What is the value of a_6 ?

10.

Malika ran 3 miles. She ran the first mile in 6 minutes and 45 seconds. Each of the remaining two miles after that took $\frac{1}{9}$ longer than the previous mile. We must find, in seconds, how long it took Malika to run all 3 miles.

