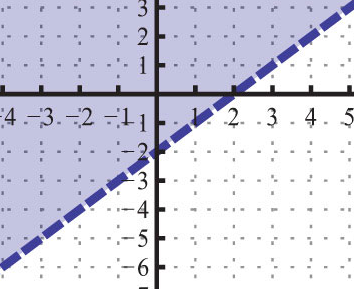
**FMA Team Mathematics Competition - Zone**

**YEAR 10 – 2016**

Y10/1 A bee out on a pollen-hunt, leaves the hive and flies 300 m east, then 400 m south, then 330 m west and finally 360 north where it finds the right flowers.

What is the distance from the hive to the flowers?



Y10/2 For what inequation is the following the graph of?

Y10/3 Expand and simplify;

Y10/4 "**Pythagorean triples**" are integer solutions to the **Pythagorean** Theorem, a2 + b2 = c2. If is a Pythagorean triple, apart from 0, what is the value of ?

Y10/5 Solve for the value(s) of x from the given equation:



Y10/6 Find the value of x in the following table:



Y10/7 A sphere and a closed cylinder have the same radius. The height of the cylinder is four times the radius. What is the ratio of the volume of the cylinder to the volume of the sphere?

Y10/8 Evaluate the following:



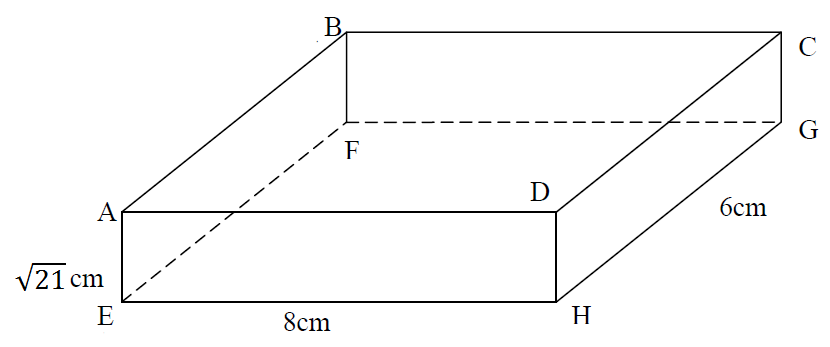
Y10/9 A quiz has thirty questions whose answers can only be correct or incorrect.

A correct answer scores 8 points, but 3 points are deducted for every incorrect answer.

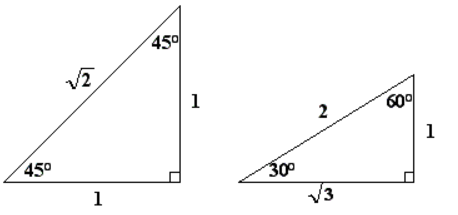
Sneha entered the quiz and scored a total of 152 points. How many questions did she get correct?

Y10/10 Which fraction x with has smallest (positive) denominator?

Y10/11 A sum of $520 dollars is divided between John, Sera and Romita so that John receives twice Sera’s share and Sera receives 3 times Romita’s share. How much was Sera’s share?

Y10/12 The rectangle box has dimensions as shown. What is the length of

Y10/13



Given below are the two special triangles (‘special’ as they yield exact, non-decimal values of trigonometric ratios of frequently used angles). Using the triangles and the trigonometric formulas determine the exact value of



Y10/14 A camping trip involves 286 scouts. A family of 4 get a tent each and others use tents provided each tent sleep no more than 8 scouts. What is the minimum number of tents needed to house everyone if there are 45 families in the trip?

Y10/15 The division of a whole number N by 11 gives a quotient of 129 and a remainder of 7. Calculate the value of N.

Y10/16 Find the value of x for which the property where holds true.

Y10/17 What is the least positive number divisible by 7, 6 and 12.

Y10/18 What is the value of n such that is a perfect square?

Y10/19 If four different positive numbers m, n, p and q satisfy the equation:



Calculate the sum 

Y10/20 When 97 is written as the difference between the squares of two positive consecutive integers, both being less than 100, then what is the value of the smaller integer?

TIE BREAKER

Y10/21 If and what can we logically say about c and f?

Y10/22 In a period of time a tortoise moves 18 feet, a student walks 54 meters , and a bird flies 3.5 miles. What is the total distance ,in meters, travelled by all three in this period of time? Hint: 1 foot = 30 centimeters , 1 mile = 1.6 kilometer.