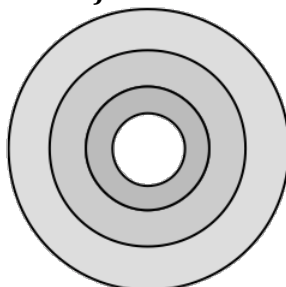


DEPARTMENT OF MATHEMATICS  
**PROBLEM SOLVING CHALLENGE**

Q1.

*Junior Cycle*

The circles shown below are concentric and have radii of length 3 cm, 4cm, 5cm and 6 cm respectively. What is the probability that a random shot that hits the target will hit the bull's eye (i.e. land in the innermost circle)?



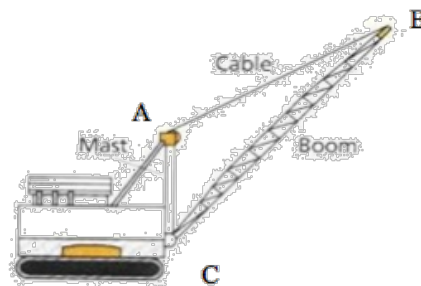
Q2.

*Senior Cycle*

The mast of a crane is 30.5 m in height.

The ratio of the length of the boom to the height of the mast is 3:1

By adjusting the length of the cable, the operator of the crane can raise and lower the boom.



- (a) What is the minimum distance possible from A to B?
- (b) When the boom of the crane, (CB), is fully lowered point B is on the horizontal ground. At this stage the size of the angle ACB is  $120^\circ$ .  
What is the length of the cable now between A and B, to the nearest metre?
- (c) If point C is 1.3 m above the ground when, how far is the point B from the base of the crane (line AC) when the boom is fully lowered to the ground (to nearest metre)?

Answers on an A4 sheet with your Name, Year and Class should be handed into the box in the office before 4pm on Friday 15<sup>th</sup> of May

Monthly Prize for both *Junior* and *Senior* Cycle.\*

**Good Luck.**

*Junior Cycle students answer question 1 only.*

*Senior Cycle students answer question 2 only*