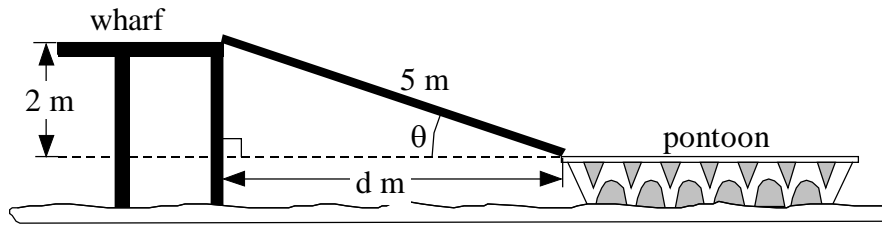


1)



NOT TO SCALE

The diagram shows a wharf and a floating pontoon. A 5-metre plank is positioned to reach the edge of the pontoon 2 metres below the top of the wharf.

a. Find the angle θ , to the nearest degree.

_____ (2 marks)

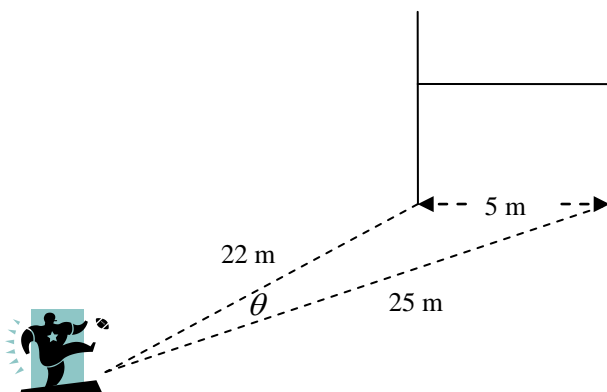
b. Find the distance, d metres, of the pontoon from the wharf. Give your answer correct to one decimal place.

_____ (2 marks)

c. The tide rises so that the plank makes an angle of 10° with the horizontal. Find how much (to the nearest centimetre) the tide has risen.

_____ (2 marks)

2)



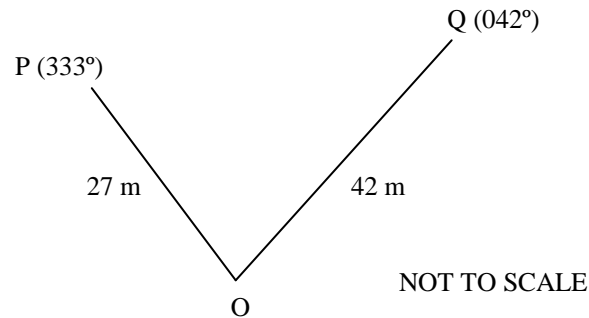
A goal kicker would like to work out what angle he has to kick a goal between the vertical uprights as illustrated. Calculate what angle, θ , he has to kick the ball between the vertical uprights. Give your answer to the nearest minute.

_____ (3 marks)

Name _____

Teacher _____

- 3) The diagram below illustrates part of a radial survey of a tract of land.



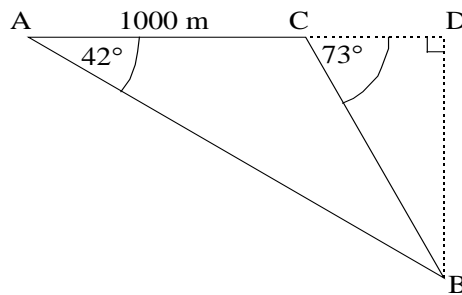
- a. Show that $\angle POQ$ is 69°

(1 mark)

- b. Find the area of triangle POQ to the nearest square metre.

(2 marks)

- 4)



A plane is flying across the ocean at a constant altitude. At the point A the angle of depression to a boat B is 42° . After the plane flies another 1000 m towards the boat the angle of depression at point C to the boat is 73° .

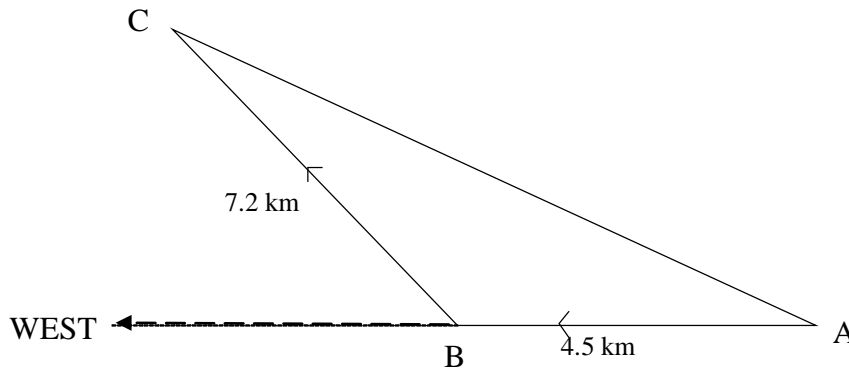
- a. Find the distance BC, using the sine rule.

(3 marks)

- b. The plane continues until it is at the point D, directly above the boat. How far is it from C to D, to the nearest metre?

(2 marks)

- 5) Matthew, a four wheel drive enthusiast, travels along a track from point A due west to a point B, a distance of 4.5 kilometres. He then travels on a bearing of 312°T for a distance of 7.2 km until he reaches point C.



NOT TO SCALE

- a. Find the size of angle ABC.

(1 mark)

- b. Use the cosine rule to calculate the distance of Matthew from his starting point, correct to 1 decimal place.

(2 marks)

- 1) John is a professional darts player. The probability he will hit the bulls eye on any throw is 0.75. How many bulls eyes would you expect John to get in 160 dart throws?

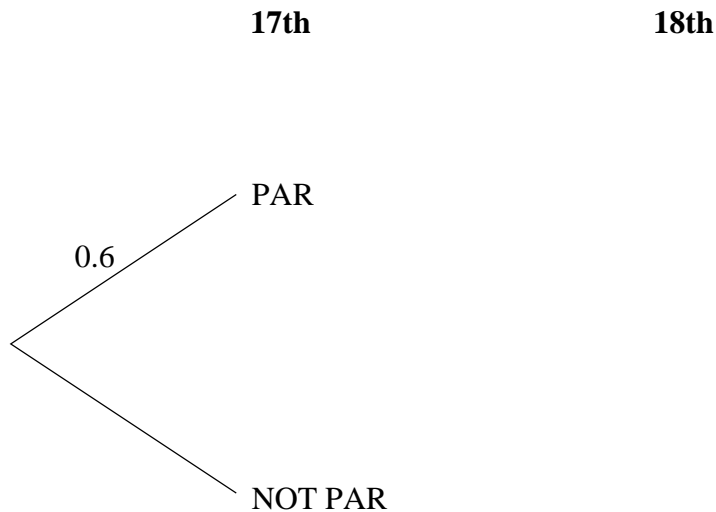
 _____ (1 mark)

- 2) There are 16 Rugby League teams participating in a local football competition. The coach tells the “Dragons” that the probability of the “Dragons” winning the competition is $\frac{1}{16}$. Comment on this statement.

 _____ (1 mark)

- 3) Based on her past performances in golf, the probability that she pars the 17th hole is 0.6 and the probability that she pars the 18th hole is 0.7. (Note: Par is the allocated number of strokes given to play each hole.)

- a. Complete the tree diagram, showing the probability on each branch.



(1 mark)

- b. Find the probability that the golfer DOES NOT par either hole.

 _____ (1 mark)

- c. What is the probability that the golfer pars AT LEAST ONE of the holes?

 _____ (2 marks)

Name _____

Teacher _____

4) A man buys two tickets in a raffle in which 150 tickets are sold. Find the probability he wins:

a. first prize.

_____ (1 mark)

b. second prize.

_____ (2 marks)

5) A man is presented a security locker in which he will keep his valuables. He is given the choice of a security code which involves any 4 digits or a security code which involves any 3 letters. Which code should he choose? Justify your answer with appropriate mathematical calculations.

_____ (2 marks)

6) There are 24 horses that compete in the Melbourne Cup.

a. In how many ways can first and second places be filled in this 24 horse race?

_____ (1 mark)

b. If there is a late scratching from this race. (ie one horse is withdrawn from the race) what is the probability I pick first and second in the correct order?

_____ (1 mark)

7) 8 rowers are seated in a boat.

a. In how many ways can these rowers be seated?

_____ (1 mark)

b. Bill is one of the rowers, and he must be seated at either end of the boat. In how many ways can the team be arranged?

_____ (2 marks)

- 8) A study of the use of polygraphs (lie detector tests) in testing the honesty of job applicants produced these results.

	Correctly identified	Incorrectly identified	Total
Honest People	85	35	
Dishonest People	20	10	30
Total	105	45	

a. Complete the table by filling in the missing two entries above. (2 marks)

b. How many people were tested by the pre-employment polygraph?

_____ (1 mark)

c. If a person were selected at random from the group of people tested, what is the probability that the person would be a dishonest person who passed the honesty test?

_____ (1 mark)

END OF EXAM