Key Stage 4 School Worksheets Boat Show Visit

Aim of the worksheets

To give purpose to a visit to the Boat Show by using task sheets that will develop skills in researching and data handling interpreting and presentation. The sheets are intended to be either a starting or mid point in context driven work.
There are planning & research tasks prior to the show visit which will enhance opportunities when there at the show, but the main thing is flexibility to see these materials as a starting point for your specific pupil needs.

Focus of show activities from Key Stage Four Maths Programmes of Study

3.2 Geometry and measures

a properties and mensuration of 2D and 3D shapes
b circle theorems
c trigonometrical relationships
d properties and combinations of transformations
e 3D coordinate systems
f vectors in two dimensions
g conversions between measures and compound measures

3.3 Statistics

a the handling data cycle
b presentation and analysis of large sets of grouped and ungrouped data, including box plots and histograms, lines of best fit and their interpretation
c measures of central tendency and spread
d experimental and theoretical probabilities of single and combined events.

4 Curriculum opportunities

During the key stage students should be offered the following opportunities that are integral to their learning and enhance their engagement with the concepts, processes and content of the subject.

The curriculum should provide opportunities for students to:

a) develop confidence in an increasing range of methods and techniques
b) work on sequences of tasks that involve using the same mathematics in increasingly difficult or unfamiliar contexts, or increasingly demanding mathematics in similar contexts
c) work on open and closed tasks in a variety of real and abstract contexts that allow them to select the mathematics to use
d) work on problems that arise in other subjects and in contexts beyond the school
e) work on tasks that bring together different aspects of concepts, processes and mathematical content
f) work collaboratively as well as independently in a range of contexts
g) become familiar with a range of resources, including ICT, so that they can select appropriately.

The Worksheets

1 – To work out areas and perimeters
2 - For pupils to work in groups to gather information from the show enabling them to compare types of boat and present information using hand or ICT skills.
3- To convert units of measure from one system to another

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BRITISH MARINE
LEADING THE INDUSTRY

BRITISH MARINE
BOAT SHOWS
LONDON & SOUTHAMPTON

My Exhibition Stand

Planning an exhibition stand is critical to the success of the show for both the companies and the visitors. It is a big business in its own right which will have been taking place over a period of up to a year before the show. Some companies will do all the work themselves, but many employ a specialist company that will have to present a proposal of stand design and cost. They will offer several options to tailor the stand to meet the client needs. Much of the work will be done as a model that can be altered using a spreadsheet with the ability to offer a range of variables to the client.

Your Task

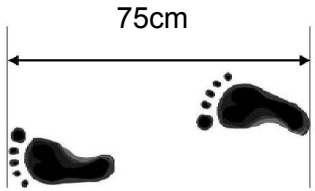
Gather Data about stand shapes and sizes at the show, so that you have enough information and ideas to produce your own proposals.

Rather than try to measure stands, estimate sizes and then 'pace' them out ready to convert into dimensions later

Take note of the features on the stands, e.g display methods, large hardware units, lighting etc

You can prepare some of the research before you go to the show by going online to the British Marine Website and investigating the 'Exhibitors' pages of their boatshow sites.

Measuring your 'pace' size



School Task

Plan your own stand with all the information required to arrive at key criteria if you were to present it as a solution to a potential exhibitor.

Decide what will be on the stand from clothing to a super yacht, what sort of stand will you need?

Space	**Features**	**Facilities**
area volume height	Racking, office, IT facilites, Lighting, seating	Water, electricity

Using a spreadsheet list all the variable data required to make a costing proposal.

Don't forget to offer incentives such as discounts for various options

Look at a converter to show your costs in different currencies, Marine is a truly International market!

Present your data so that it can be read simply and effectively, consider presenting the breakdown of cost options in a graphical form.

To give your prospective client an impression of the power of the show produce a probability study that statistically shows that having a show stand will improve marketing and sales opportunities. Information to base your analysis can be found in the Audience Facts and Statistics section of the show websites.

DETAIL	UNIT COST	NO'S REQ'D	TOTAL COST
Space			
Shell Stand 4m X 10m	264.15	40	10,566.00
Outdoor Floor space Stand 20m X 10m	83.37	200	16,674.00
Round Stand 10m dia	83.37	31	2,584.47
			-
Power Distro			
PA	500.00	1	500.00
Electricians	400.00	1	400.00
Hardware	1,000.00	1	1,000.00
Structures			
Mini Marquees		6	-
7' x 20' marquee - Electric Control			
7' x 20' marquee - Reception area	55.00	4	220.00
30 x 50 marquee - inc installation	600.00	1	600.00
40 X 50 marquee - inc installation	785.00	1	785.00
40 x 70 marquee - inc installation	1,095.00	1	1,095.00
Tiered seating	900.00	2	1,800.00
Furniture			
Propane Burners		2	-
5' round tables - Hospitality	4.00	20	80.00
Samsonite chairs	1.00	120	120.00
Trestle Tables	2.00	275	550.00
6' Bar counter	30.00	2	60.00
Screen partitions	-	75	-
Linen			-
90" rounds		14	-
Slip Cloths		14	-
70" x 108" for trestles		8	-
Catering			
Tea and Coffee unlimited		280	-
Cans - 3 per student	0.25	2000	500.00
Plastic cups		1	-
Crew Bacon Rolls		30	-
Hospitality Catering Pig Roast	1,062.12	1	1,062.12
Production of signs / passes			
Hospitality Passes		280	-
Student drink cards		1070	-
107 x A4 laminated signs		107	-
Additional signage		1	-
Crew			
Event Crew	50.00	4	200.00
Commentary for racing	350.00	1	350.00
Crew to serve drinks	50.00	2	100.00
Litter clearance	30.00	2	60.00
Misc.			
			-
		Sub Total	9,482.12
		VAT	1,659.37
		Total	**11,141.49**
	2803	SUB TOTAL	16,661.00
		MANAG FEE	7,000.00
		TOTAL	£ 23,661.00
			4140.675
			27,801.68

Sample event proposal spreadsheet giving the option to change variables

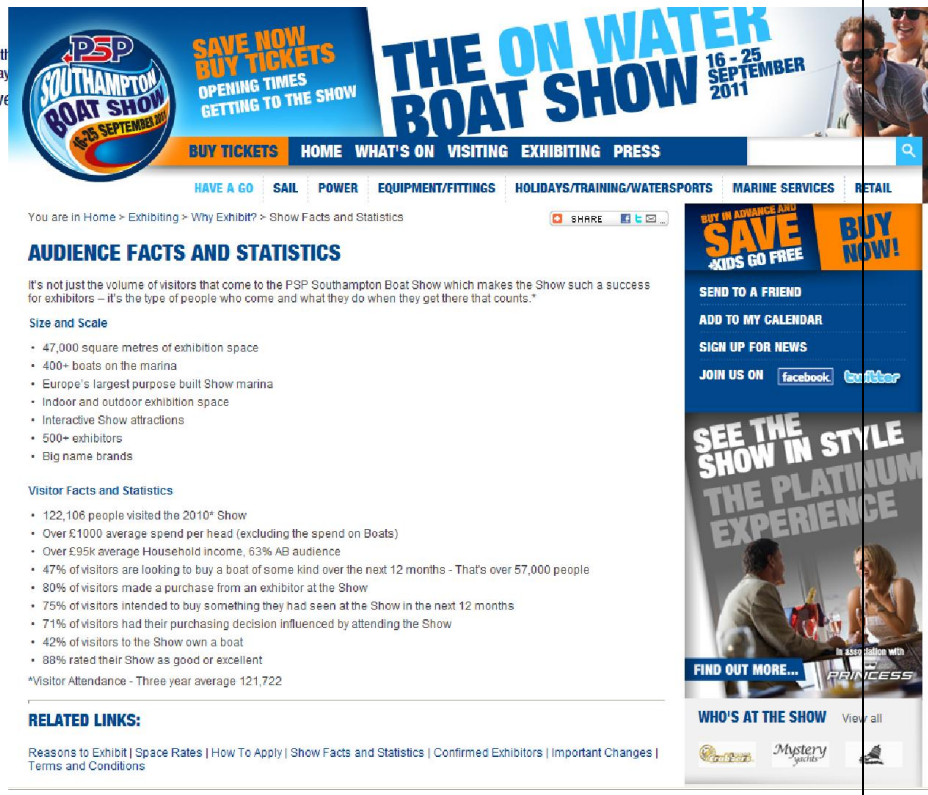
RATE CARD (Excluding VAT)

Type of Space	2011 Nett Rates	With 5% Early Commitment Discount
Under Cover Open Space / SQM	£120.60	£114.57
Under Cover Shell Space / SQM	£264.15	£250.94
Outdoor Open Space / SQM	£83.37	£79.20
Small Boat Area (up to 2 slots / 5m x 2.5m Space)\slot	£278.93	£264.98
Small Boat Area (3rd & 4th slot at normal outdoor open rate)\slot	£1,041.96	£989.86
Marina Berth / LOA x Beam	£188.12	£178.71
Marina Hospitality Deck	POA	POA

PAYMENT SCHEDULE

In recognition of the current economic climate, South
deposit received by **25th February** to those who pay
20% deposit with application form receive
80% received by **29th July 2011.**

Data to enable you to produce cost options



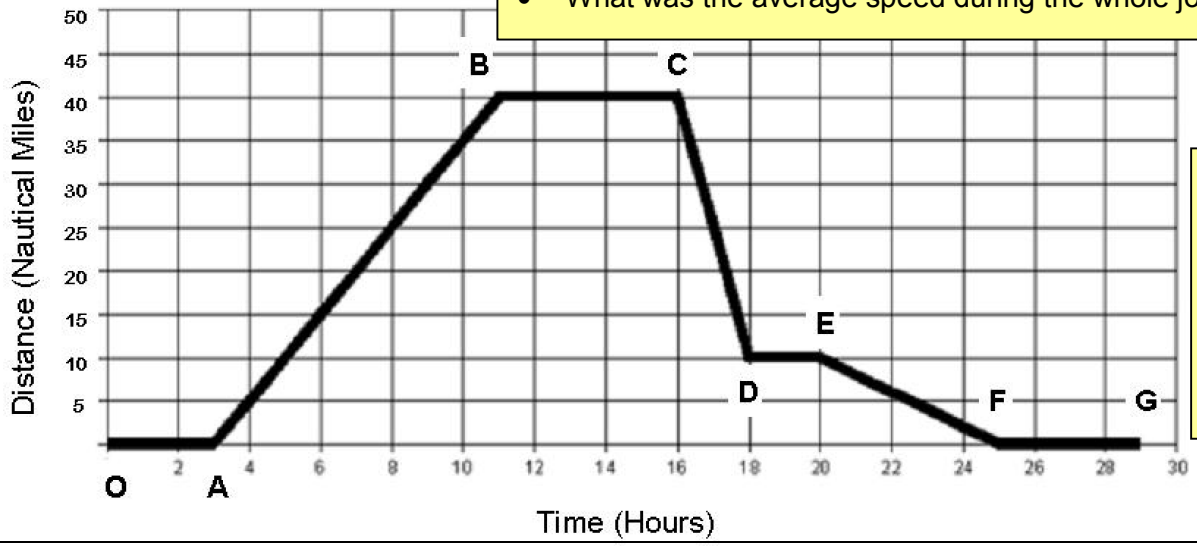
Navigation

You will find one of the biggest demands for electronics in the marine industry is within navigation systems. In recent years the ability to use GPS systems has become within the reach of nearly all boat owners, both in terms of cost and application.
At your visit to the boat show you can find out how plotting a course relies on vectors and distances that are affected by several variables. We can produce mathematical models of journeys from the simplest to the most complex, which minimise risks and make sure you have a plan that will result in you arriving at your destination.

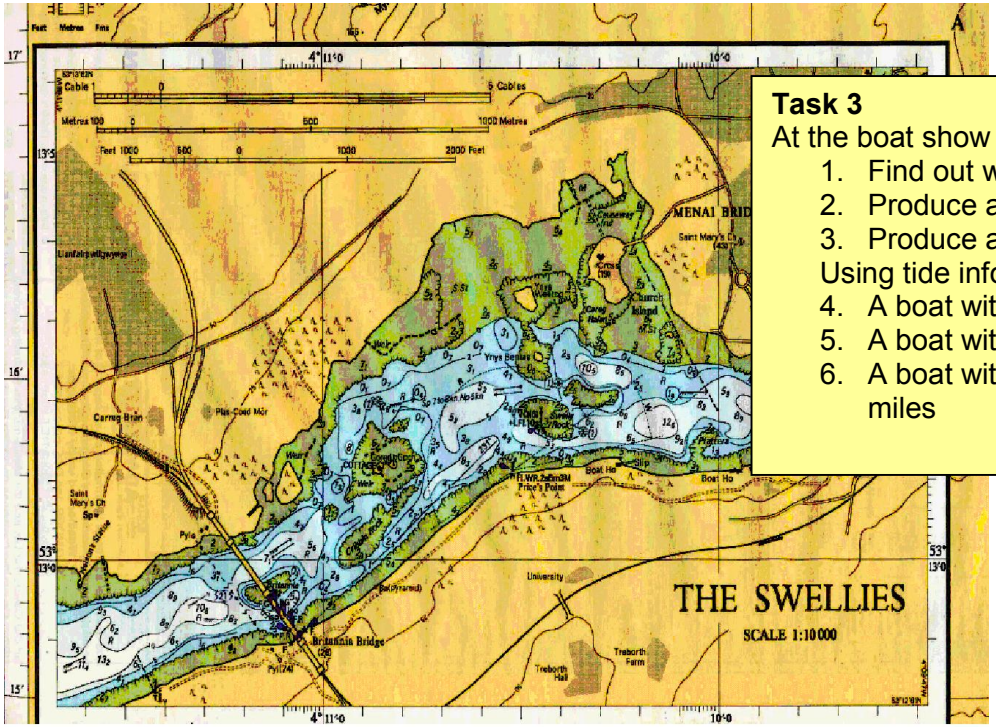
Planning a journey by water, especially at sea is far more complex than on land and care must be taken to ensure time, distance, weather and sea conditions are all taken into account. Three of the most critical factors are ensuring there is enough fuel for a journey and that weather and tidal information has been factored in.

Task 1
The Time / Distance log shown is for a sailing boat making a return journey on a tidal stretch of water
Interrogate the graph to answer the following, you may be able to get some expert help from a stand.

- At which points was the boat either not moving or not making headway?
- What is the likely activity taking place from points O – A
- How much distance did the boat cover between A – B
- At what speed was the boat travelling
- What could have been happening at point B – C
- At what point on the graph is the boat moving the fastest?
- What speed is this?
- If the Speed over water of the boat is constant give a likely explanation for the differences in the distance covered at points A-B, C-D, E-F
- What was the total distance covered in this journey?
- What was the average speed during the whole journey?



Task 2
Find out how to plot a simple course to take you on a return journey running against the tide on departure and with the tide on your return. Select either a ficticious location or a real one, e.g the Menai Straits
Produce a graphical representation of your journey



Task 3

At the boat show gather informastion on plotting a course for a boat of your choice.

1. Find out what the term S.O.G means
2. Produce a journey log that can be plotted using co-ordinates.
3. Produce a time distance graph showing how the SOG is affected by tides

Using tide information from the show give examples showing calculations for:

4. A boat with a cruising speed of 8kn travelling against a tide of 4kn for 10 nautical miles
5. A boat with a cruising speed of 8kn travelling with a tide of 4kn for 10 nautical miles
6. A boat with a cruising speed of 8kn travelling at 45^0 to the tide of 4kn for 10 nautical miles

Extension task Vector Diagrams

Whilst you are at the show research how vector diagrams are used to plot a more complex course.
This could feature tidal and wind speed as well as any navigational issues such as shipping lanes, obstructions, draft of your boat etc

Using the Internet find some research tools to help you produce an example of how vector diagrams are used in navigation.
A good starting point is www.sailtrain.co.uk