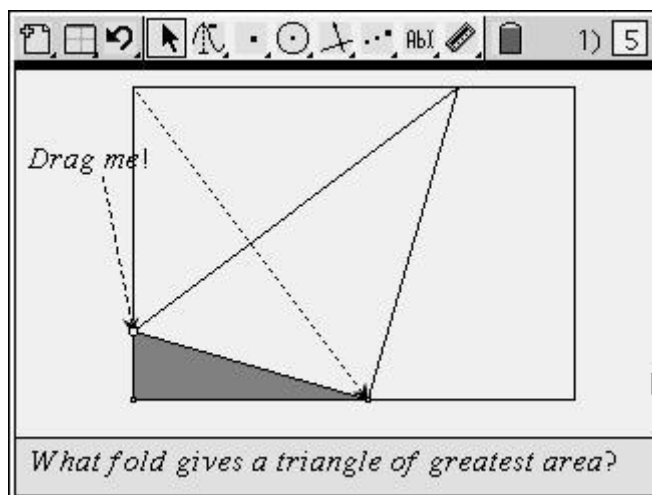
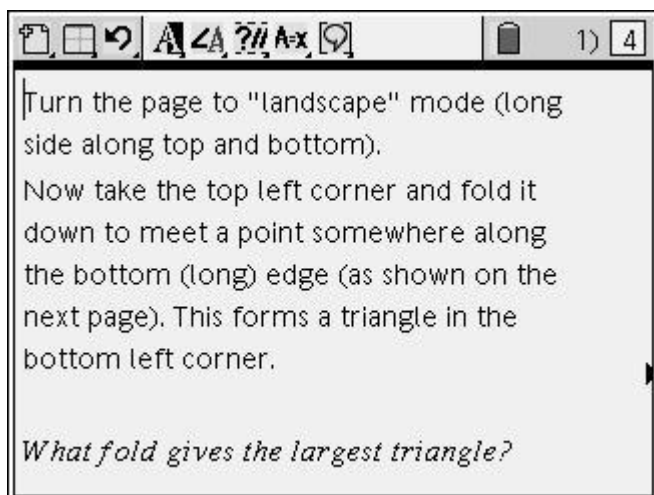
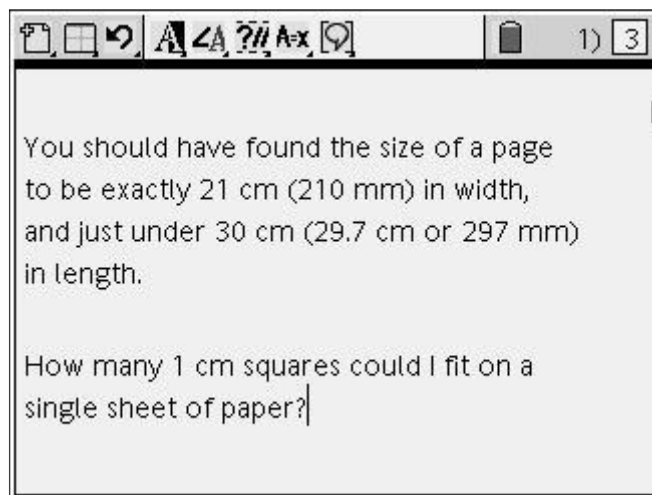
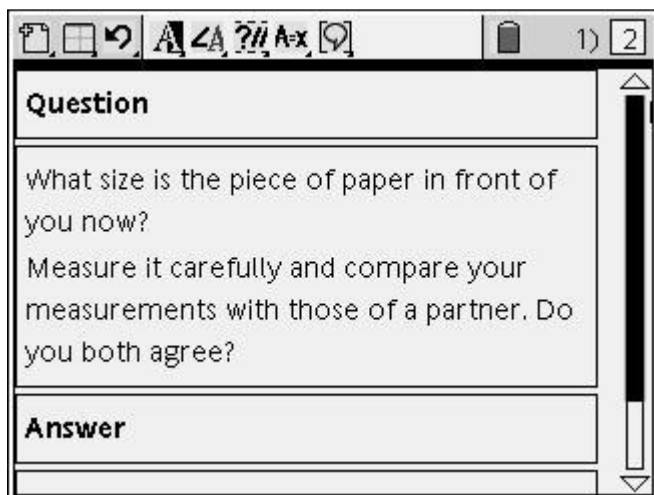
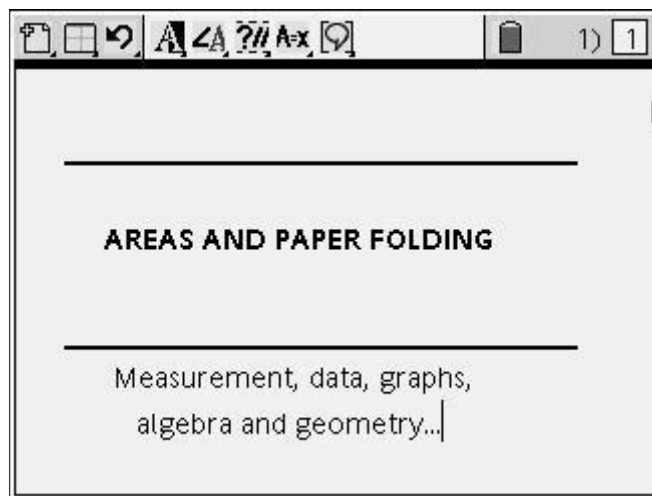
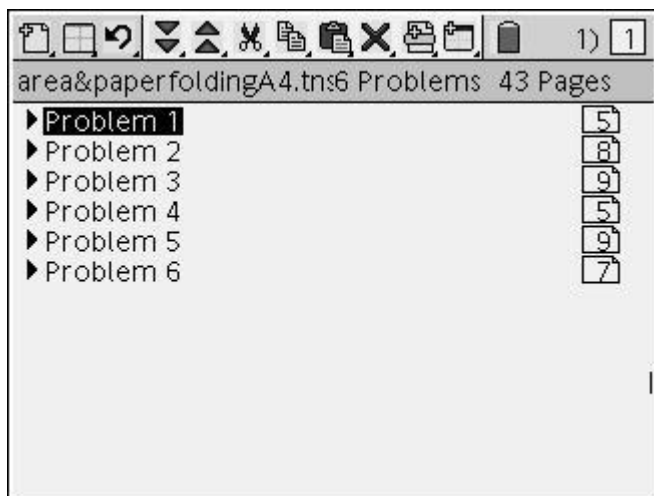


APPENDIX: Screen shots from Areas&PaperFoldA4.tns



Year 7/8

- * Number, operation and quantitative reasoning
- * Patterns, relationships and algebraic thinking
- * Measurement
- * Geometry and spatial reasoning
- * Probability and statistics
- * Underlying mathematical processes.

Question

Measure the height and base of the triangle you have formed from your sheet of paper.

Find the area of your triangle and check that a partner agrees!

Answer

On the Lists & Spreadsheet page following, enter the height and base for all the triangles formed in your class.

Check that the area results agree with yours. How might you explain any differences?

	A	height	B	base	C	triarea
						=height*base/
1		9		8		36
2		10.2		3.3		16.83
3		8.5		9.3		39.525
4						
5						

$C \mid \text{triarea} = \frac{\text{height base}}{2}$

Now use the geometric model on the following page to explore this problem more closely.

Compare the scatter plot from the class data with the points generated by our geometric model!

Area

45

5

5 10

height

Drag me!

height $OX = 4.2$

Area $OAX = 34.43$

What fold gives a triangle of greatest area?

2) 7

Question

Carefully explain how the graph helps us to answer our question.

Answer

2) 8

Question

Using your class data and the geometric model, which dimensions appear to produce the largest triangle?

Answer

3) 1

Year 8/9

- * Foundations for functions
- * Linear functions
- * Quadratic & other non-linear functions.

3) 2

Question

For what values of x does the triangle OAX cease to exist? Why?

Answer

3) 3

Use Pythagoras' Theorem with the height and base measurements to find the length of the hypotenuse of our triangle.

Check your result by measurement, and enter the class data on the next page.

3) 4

	A	height...	B	base_...	C	hypot...
◆						=sqrt(height_
1		9		8		√(145)
2		10.2		3.3		10.7205
3		8.5		9.3		12.5992
4						
5						

$C \mid \text{hypotenuse_ax} = \sqrt{\text{height_ox}^2 + \text{base_oa}^2}$

Now use the Graphs & Geometry page following to explore the relationship between the **height** (OX) and the **hypotenuse** (AX).

hypotenuse 20
5
10
height
height $OX = 5.4$
hypotenuse $AX = 15.6$

Drag me!

How are the sides of OAX related?

Question

Find an algebraic expression for the relationship between the **height** (x) and the **hypotenuse**, $h(x)$, of our triangle.

Answer

Question

Use the tools provided to explore the relationship between the **height** and the **base** of our triangle.

Answer

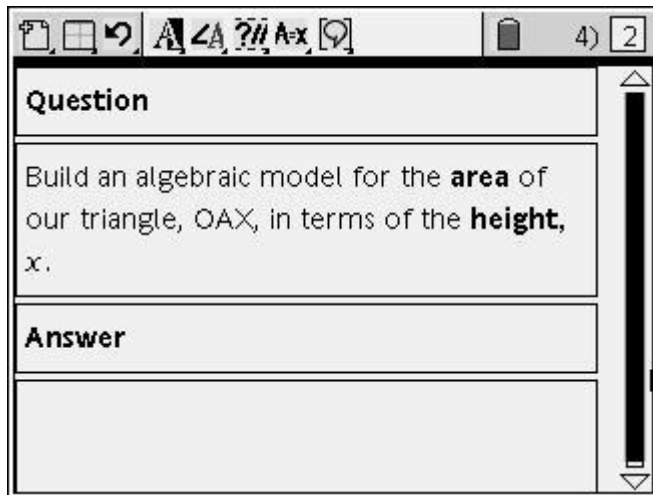
Question

Clearly describe how we might use Pythagoras' Theorem to express the **base** of our triangle in terms of **height** and **hypotenuse**?

Answer

Year 9-12

- * Foundations for functions
- * Algebra and Geometry
- * Quadratic and square root functions



The image shows a screenshot of the TI-Nspire CAS interface. At the top, there is a toolbar with various icons for file operations, editing, and navigation. Below the toolbar, the interface is divided into sections. The first section is labeled "Question" and contains the text: "Build an algebraic model for the **area** of our triangle, OAX, in terms of the **height**, x ." The second section is labeled "Answer" and is currently empty. A vertical scrollbar is visible on the right side of the question and answer sections.