

PRODUCT DEVELOPMENT EXERCISE DEVELOPMENT DESIGN SHEET 6

V.Ryan © 2000 - 2012

On behalf of The World Association of Technology Teachers

W.A.T.T.



World Association of Technology Teachers

This exercise can be printed and used by teachers and students. It is recommended that you view the website (www.technologystudent.com) before attempting the design sheet .

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PRODUCT DEVELOPMENT EXERCISE

PAGE FOUR

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THE TAPE MEASURE

Study the sample development page (page 2).

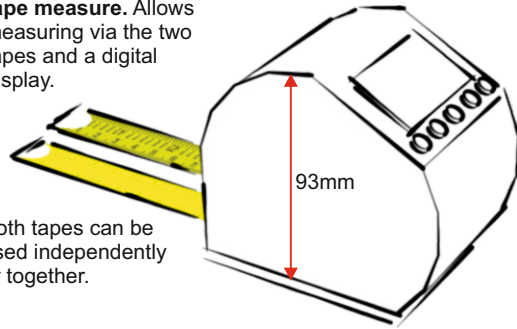
How many of the key areas (page 3) have been mentioned on this sheet? Place a tick against the areas included.
(See slide three for key areas)

What grade would you give this development sheet?

WHAT AREAS / TECHNIQUES NEED TO BE INCLUDED ON THE FOLLOWING DEVELOPMENT SHEETS?

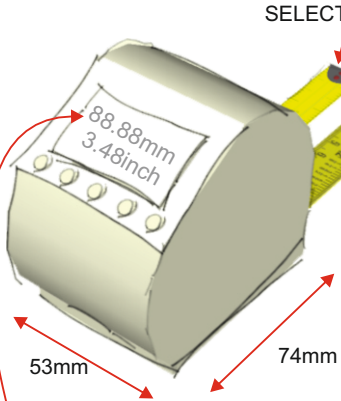
Metric and imperial tape measure. Allows measuring via the two tapes and a digital display.

Both tapes can be used independently or together.



GENERAL DESCRIPTION

Robust metric and imperial, 5 metre tape measure with digital display. Its digital memory will save up to 99 measurements. The large LCD Display ensures that measurements can be read easily. Measurements can also be read directly from the tape, through the magnifying lenses. Other functions include; last measurement hold function and auto shut off to save battery power. Dimensions W x H x D 74 x 93 x 53mm. Tape measure length 5m. Measuring accuracy, 1 hundredth of a mm.

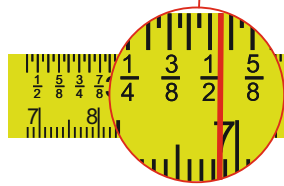
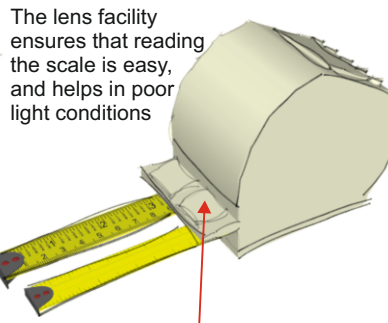


88.88cm
3.48inch



The **function buttons** will allow easy selection of various features. Each function button will be allocated a dedicated feature. The buttons have been positioned so that they cannot be 'knocked' accidentally.

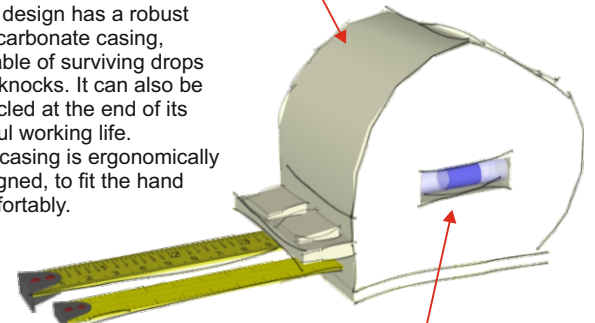
SELECTION OF SCALES



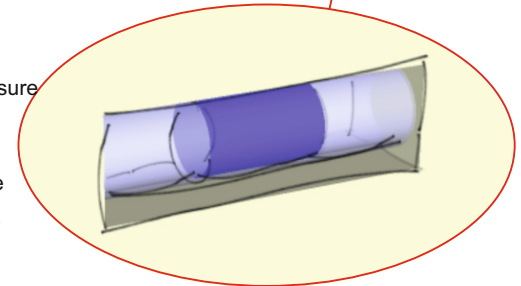
The lens has a RED datum line that accurately indicates the correct measurement. The lens clearly displays both imperial and metric scales.

This design has a robust polycarbonate casing, capable of surviving drops and knocks. It can also be recycled at the end of its useful working life. The casing is ergonomically designed, to fit the hand comfortably.

ERGONOMIC SHAPE



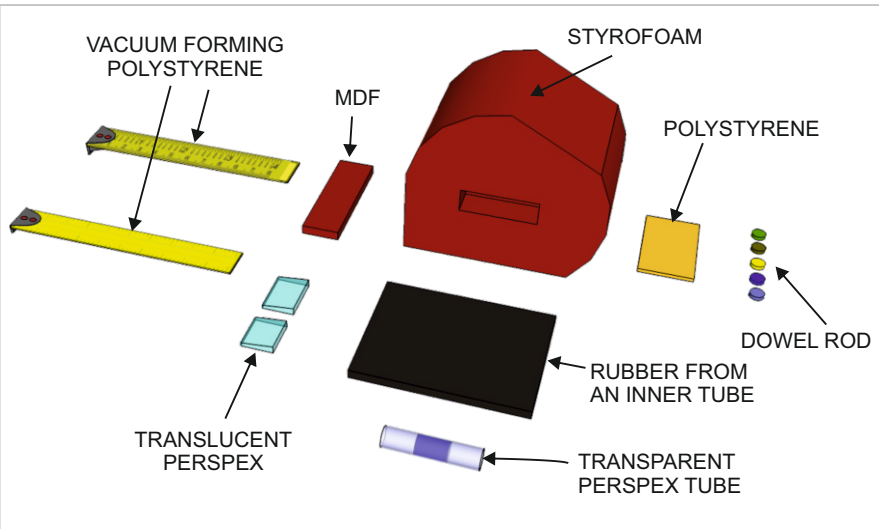
EASY TO SEE SPIRIT LEVEL



A spirit level is a logical addition to the tape measure and it complements its functions.

It will be used by a range of trades, including builders, joiners and DIY enthusiasts.

MODEL COMPONENTS



I made a **model** from a variety of modelling materials including:

- Styrofoam
- Polystyrene
- Dowel rod
- Rubber
- MDF
- Translucent perspex
- Translucent perspex tube

When tested, the model was found to be 'bulky' and relatively uncomfortable to hold. However, it was very stable, due to its wide base. The lenses were found to be in the wrong position for proper viewing. The function buttons were easy to use and the display was in the right position for normal viewing. The two scales, were awkward to use together, and when one was in use, the other got in the way.

The overall design needs further development, if this is to be a successful design. If the design is developed further, the end of life cycle disassembly of the tape measure, in readiness for recycling, will be a priority.

My client and other potential customers did not like this design, mainly due to its overall size. They felt it was too large for general use, although it incorporated some good features and functions.

They suggested only one scale was necessary and that having two was more of a 'gimmick' than it realistic solution.

The potential clients also felt that a small spirit level was useful to those carrying out limit DIY, but not accurate enough for professional trades people.

The shape was deemed to be less than a good ergonomic design, as it was not entirely comfortable in the hand.

The 'easy to see' spirit level was referred to as 'difficult' to see and use.



ANTHROPOMETRICS AND
ERGONOMICS

HEALTH AND SAFETY ISSUES
DISCOVERED AND RESOLVED?

METHOD OF
CONSTRUCTION
MODEL AND REAL PRODUCT

MANUFACTURING
PROCESSES
INJECTION MOULDING ETC...

MATERIALS
PROPERTIES OF MATERIALS

DISASSEMBLY
OF PRODUCTS/
MODELS

CUSTOMER /
CLIENT VIEWS

STYLE / AESTHETICS

DIFFERENT IDEAS
VALID IDEA ?
DEAD END?

EVALUATE IDEAS

FOUND ANY PROBLEMS?
WHILE SKETCHING / MODELLING

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SOLVED ANY PROBLEMS?
WHILE SKETCHING / MODELLING

EVIDENCE
PHOTOGRAPHS IN REAL TIME
AS YOU WORK
VIDEO CLIPS

VIEWS OF OTHERS

MODELS AND PROTOTYPES
2D AND 3D

ONGOING TESTING
EXPERIMENTATION

ENVIRONMENT
LIFE CYCLE
SUSTAINABILITY

COSTS
TO MANUFACTURE
PRICE TO CUSTOMER

REFER
TO SPECIFICATION
REGULARLY
CHECK YOU ARE KEEPING TO
THE SPECIFICATION

SKETCHES
EXPLODED VIEWS
COLOUR RENDERED ILLUSTRATIONS
SECTIONAL VIEWS
ORTHOGRAPHIC
CAD COMPUTER AIDED DESIGN

SIZES
LENGTH, HEIGHT AND DEPTH