

Te Paepae o Aotea Science Badge

WOOL SCIENCE			
<i>Complete 20 stars</i>			
Rating	No	Exercises in Wool Science	Sign
*	1	Describe 5 sheep breeds found in New Zealand and the particular type of wool each provides	
**	2	Make a collection of wool samples. Label each sample and mount them on a card	
**	3	Use a microscope to observe differences in diameter, crimp and scale structure of Merino, Romney and Drysdale wool. Draw labelled diagrams	***
***	4	Take 100 staples from a fleece, measure their length with a ruler and plot a bar graph of the results	
**	5	Describe the structure of a wool fibre. Illustrate this with a drawing. Relate this to wool's properties (i.e. retains its shape when stretches, does not burn, etc)	
***	6	Design and carry out an experiment to show that wool can hold up to 30% of its weight as water, yet not feel wet. Discuss the importance of this property. Have your teacher approve your experiment before you try it	
**	7	Why is wool greasy? Show on a poster how the grease is produced, how it affects the wool and what it is used for after it is removed from the wool through scouring	
***	8	Determine the grease content of a wool sample by weighing it before and after washing it with detergent and allowing it to dry thoroughly in the air before the second weighing. Why is this necessary?	
**	9	Investigate how the Drysdale and Coopworth sheep breeds were developed in New Zealand and discuss the impact of genetic engineering on the wool industry	

***	10	Find out how black and coloured sheep breed's wool differs from white wool. Discuss. Include a description of the pigment, a description of sheep breeds that are born black and turn white and why coloured fleeces fade over a period of years	
*	11	What happens to the fleece as the sheep ages?	
**	12	Compare the strengths of different types of knitting yarns by adding weights to 50cm lengths of each until they break. Display your results on a chart	
***	13	Find out what influences the quality of a sheep's fleece. Discuss. You might include a description of discolouration, tenderness, cotting, etc. Mount and label wool samples to illustrate your findings	
***	14	Investigate the performance of wool products. Design an experiment to test durability, fading and soiling of carpets or fabrics. Test both pure wool and synthetic fibres	
***	15	Investigate the carpet making process. Show your findings by creating a display showing the steps in the process	
**	16	Dye some samples of raw wool with natural materials, and mount your samples on a display card with a description of the methods you used. You might consider using onion skins, flax root, tree bark, leaves or other materials	
**	17	Investigate different products using wool. How has science and technology been involved in the use of wool? Provide a description of some of the most recent developments in wool	
***	18	Design and carry out an experiment that demonstrates that wool has a greater ability to felt than synthetic fibres like	

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		nylon or polyester. What feature of the wool fibre enables felting to occur? Where is felting used? Where is it a problem?	
**	19	Mount a display showing wool used in several different ways e.g. knitting, crocheting weaving, carpets etc	
*	20	What effect does hot water have on wool? Measure exactly 1 metre of knitting wool. Boil for 5 minutes and remeasure. Describe what happens	
*	21	Place a length of white knitting wool with onion skins and boil for 5 minutes. Display a sample of the wool before and after the process	
**	22	Repeat the above using a variety of other natural dyes e.g. flowers, dock leaves etc	
*	23	Describe how mordants are used in dyeing	