Activity sheet

Investigating our sensory system

Name:

Class:

The following table shows a range of activities to investigate the senses. Work with a partner to observe the effects of two of these tests. Share your results on the class wiki.

Touch investigations	
Test 1 Distance discrimination Use a paperclip or two pins inserted into a cork (blunt heads outwards) at a pre-measured distance to investigate the distance at which your partner feels them as a single pressure point. Test the calf and the arm.	**Observations**
Test 2 Discriminating detail Choose one method. Use a dull-pointed object (a capped pen works well) to do this test. With your partner watching, 'write' numbers on the palm of the hand. Then, with your partner's eyes closed, repeat the test and ask which numbers you were writing. Or A variation of this test uses a Braille card. Use a pin to press holes through the dots of a photocopy of the Braille alphabet, from the back of the paper. Your partner identifies the letters (without looking) by feeling the raised bumps.	**Observations**
Test 3 Tactile movement Use a dull-pointed object (a capped pen works well) to do this test. Without your partner watching, stroke the blunt object softly in four directions (left, right, up, down) on their arm. Can your partner identify the direction? What does this mean for nerve distribution?	**Observations**
Test 4 Touch adaptation Use a blunt pin (or perhaps a toothpick) to do this test. Without your partner watching, wriggle a hair on their arm. How long does it take for your partner to stop feeling this stimulus? Repeat on another hair or two. Does the time factor change? Now rub the skin where the hairs were for about 15 seconds. Are the hairs still sensitive?	**Observations**

Test 5 Heat In this test you need a towel and three bowls of water: hot (35°C), warm (25°C) and cool (15°C). Place the warm water in the centre of the three bowls. Place one hand in the hot water, the other in cool water, for one minute. Now plunge both in the warm water. What do you feel?	**Observations**
Sight investigations	
Test 6 Stereovision For this test you need 10 buttons and a cup placed at slightly less than arm's length. Covering one eye, pick up the buttons (one at a time) and drop them into the cup from a height of 40 cm. Change eyes and repeat. Repeat with both eyes open. Was there any difference in your results?	**Observations**
Test 7 Colour vision Use a search engine to search for the words 'colour vision test'. Take the test. What did you find?	**Observations**
Hearing investigations	
Test 8 Can you 'hear' without ears? For this experiment, you need a balloon and a radio. Blow up the balloon, place your hands on it and place it about 3–4 cm from a speaker. Can you feel how it amplifies the sound vibrations?	**Observations**
Test 9 Stereohearing This effect is best demonstrated on the class. Choose a subject and a recorder. Blindfold the subject, who stands in the middle of a circle of students. A student who is the recorder points to a student in the circle, who makes a noise (e.g. by tapping an empty tin with a wooden skewer). The subject points in the direction they think the sound comes from and the recorder notes the response. Compare the accuracy when the subject uses both ears and a single ear.	**Observations**

Taste investigations	
Test 10 Five tastes? Using disposable cups and a fresh cotton bud for each taste, map the positions on your partner's tongue that are sensitive to saltiness, sweetness (sugar), acidity (dilute vinegar), bitterness (very dilute quinine chloride solution or tonic water that also contains small amounts of sugar). **Safety:** If you are unable to taste any of the liquids, act as the recorder for this test.	**Observations**
Test 11 Saliva Swallow your saliva and dry your tongue. Now place a sugar cube on your tongue. Repeat the experiment, this time with a wet tongue. What is the role of saliva?	**Observations**
Test 12 Taste and smell With your partner closing their eyes and pinching their nose, ask them to identify a range of foods. Use a new, clean toothpick for each food. (Try as many of the following as are available: small cubes of raw potato, apple, cucumber, pear, watermelon, rockmelon and onion). **Safety:** If you are unable to eat any of the foods, act as the recorder for this test.	**Observations**
Smell investigations	
Test 13 Smell identification In this experiment, can you identify the smells in the containers? Would it help if a list of possible smells was provided? (Examples include fresh basil, fresh parsley, freesias, geranium oil, coffee, orange rind, vinegar, lavender, bitter almond, rose essence and dishwashing liquid.) **Safety:** If you have an allergy to any of these smells, act as the recorder for this test.	**Observations**

Proprioception (awareness of limbs in space) investigations	
Test 14 Proprioception (position sense) Without your partner watching, hold the last joint of their finger (or toe) steady and move the last section of the finger (or toe) up or down. Can your partner detect the direction of the movement correctly? How large does the movement have to be to detect it correctly?	**Implications of observations**
Test 15 Romberg test Stand with your feet together and your eyes open. Then stand with your feet together and your eyes closed. Compare the effect on your balance.	**Observations**

1 Although we speak of the five senses, there are clearly more than that. List the senses that you tested.

2 Do you think that these senses develop as a result of experience (learning) or are innate (we are born with them)? Explain.

3 For one of the tests that you performed, give suggestions on how you might investigate this in more detail.

