4.3 Flowers and pollination

YEAR 8 Science NAME: _____

Science understanding, Science inquiry

Logical/Mathematical **Verbal/Linguistic**

Flowers can have many different shapes, sizes and colours. Careful study of different flowers has led biologists to conclude that these differences are related to how the plants reproduce. This table is a summary of how the main features of cross-pollinating flowers depend on the way in which they are pollinated.

Method of pollination	Flower structure/ colour/size	Anther/stamens	Stigma/style
Wind	Often small but many flowers in one head, often no petals, not brightly coloured, no nectar, no scent	Long stamens with large anthers exposed	Long style with exposed stigma; stigma has large surface area—often look like brushes
Insect	Usually small, some with many flowers in one head, brightly coloured petals especially blues and yellows, small amounts of nectar, strong scent, often strongly marked with 'landing guides'	Often short stamens and small anthers, close to nectar source in most flowers, sticky pollen	Short style, small stigma close to nectar source
Bird	Large strong flowers, some have petals but many don't, lots of nectar, often red	Often long, strong stamens and large anthers, sited a long way from the nectar source	Long style, smallish stigma, sited a long way from the nectar source
Mammal	Large strong flower heads, much nectar, often not brightly coloured in many and often hidden in plant, nectar produced at night	Strong and rigid	Strong and rigid

Some characteristics of Australian animals that pollinate flowers have also been studied, and are shown in the following table.

Animal	Characteristics
Insects	Poor eyesight, low intelligence, good sense of smell, small bodies
Birds	Good eyesight, intelligent, most active in daylight (diurnal), poor sense of smell, large bodies
Mammals	Good eyesight, intelligent, most are nocturnal, good sense of smell, large bodies

4.3

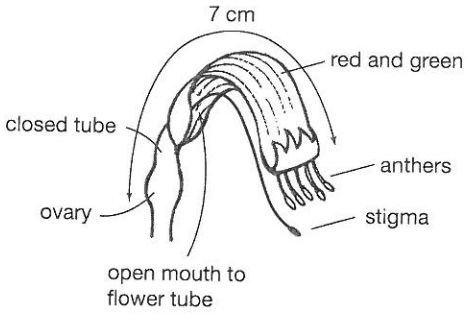
1 The flower features are related to the way the pollen is carried. **Propose** why bird-pollinated flowers would be larger and stronger and have more nectar than insect-pollinated flowers.

2 **Propose** why wind-pollinated flowers would have large brush-like stigmas and large anthers with a lot of pollen.

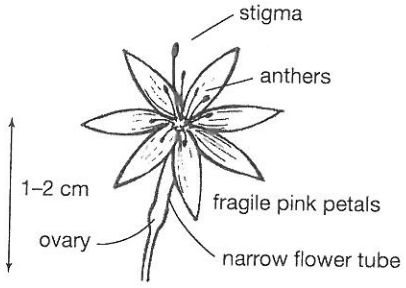
3 **Propose** why mammal-pollinated flowers in Australia lack colour, have a strong scent, and are hidden away.

4 For each flower below, **propose** which method of pollination occurs and **justify** your choice.

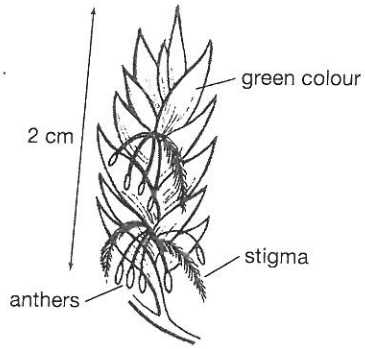
(a) Kangaroo paw



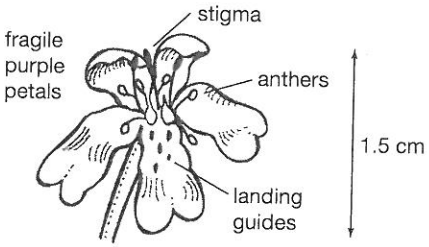
(b) Starflower



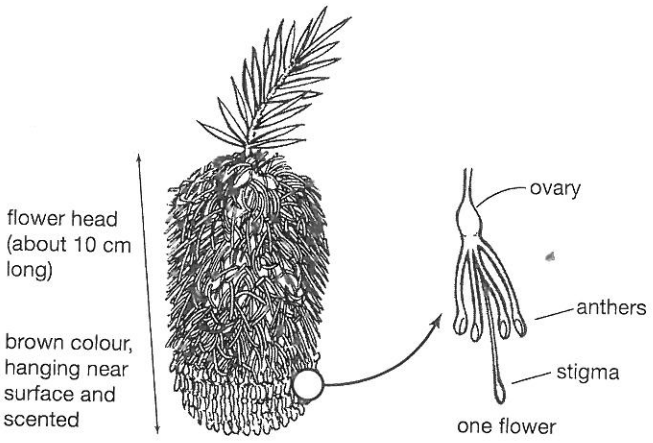
(c) Veldt grass



(d) Westringia



(e) Nodding banksia



5 Some amazing orchids have a flower that resembles a female wasp. The male wasp is tricked into trying to mate with the flower, as shown. When the male attempts to mate, a packet of pollen sticks to the wasp's abdomen. Then the wasp flies to another flower and attempts to mate with that one too. This pushes the pollen into the flower and pollinates it. Wasps have fairly poor vision and cannot see more than a few metres. **Propose** how the wasp finds the flower.