# B4.2 Ecological niches: data-based questions

What the Cell · DP Biology · data-based questions

**Name** _____ **Date** _____ **Total** _____ / 6

**Read the data carefully before you answer.** The number of marks shows how many separate points to make. Show your working in calculations.

## 1 Hawks and their prey

6 marks

In many birds of prey, females are larger than males. The mean body mass of males and females of four North American hawks was compared with the mean mass of the prey they caught.

| Species | Male mass / g | Female mass / g | Male prey mass / g | Female prey mass / g |
|---|---|---|---|---|
| **Sharp-shinned hawk** | 100 | 170 | 20 | 30 |
| **Cooper's hawk** | 280 | 440 | 60 | 120 |
| **Northern goshawk** | 900 | 1300 | 300 | 500 |
| **Red-tailed hawk** | 1000 | 1200 | 150 | 180 |

a **Compare** the body mass of males and females. **[1]**

b **Calculate** the ratio of prey mass to body mass for female Cooper's hawks. **[1]**

c **Describe** the relationship between the body mass of a hawk and the mass of its prey. **[1]**

d **Explain** how the difference in size between males and females could reduce competition between them. **[2]**

e **Suggest** one reason why the red-tailed hawk does not fit the pattern of the other three species. **[1]**