## Part 1: Primate trends

Anatomy and behaviour are important tools that scientists use to determine how organisms are related. Compare five primate skulls using the learning object, *Primate trends*. As you select skulls, rate each characteristic, and use this information to determine which are most closely related.

1. On the 'Meet the primates' screen, of the learning object, compare the five skulls and list them in order from smallest to largest.

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2. Complete the table below as you work through *Primate trends*. In each column, list names of primates in order (top to bottom) from smallest to largest (or shortest to longest) skull feature. Change skull type by selecting the button at the top left of the window showing the skull you want to view.

| | SKULL FEATURE | | | | |
|---|---|---|---|---|---|
| largest (longest) → smallest (shortest) | cranial capacity | canine length | size of mandible relative to skull | size of brow ridge | length of maxilla |
| | | | | *Homo (no brow ridge)* | |
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3. Using your observations, which species appear to be most closely related?

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4. Did you use a particular characteristic to decide on the relationships? Explain why this characteristic was more important than others; or if you didn't use a specific characteristic, explain your reasons.

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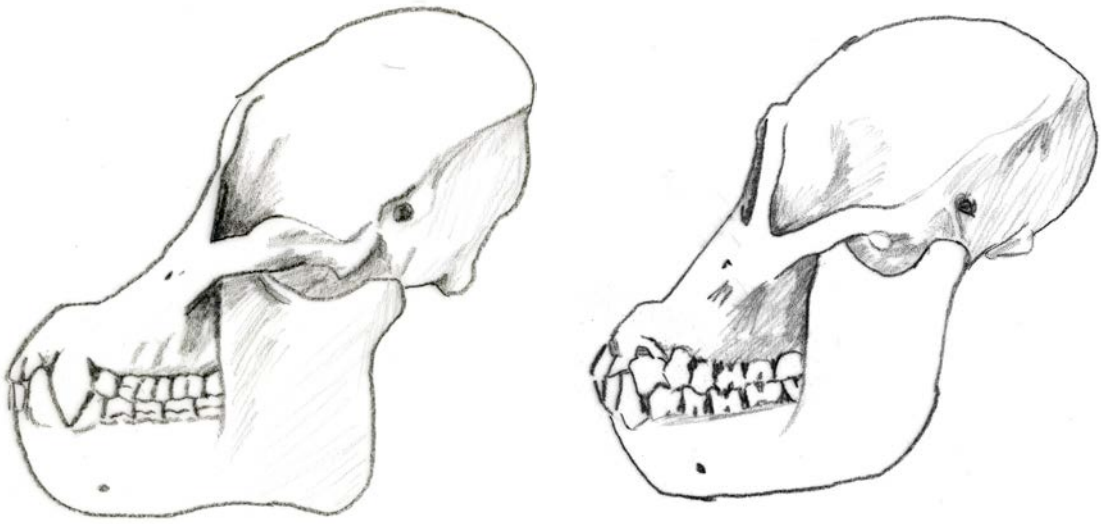
- Sexual dimorphism, or difference due to gender, is present in some of the primate species included in *Primate trends*. However, all images in the learning object are of masculine skulls.

  Compare images of male and female *Pongo* skulls below, to answer questions 5 and 6.



male female

5. Describe three features that demonstrate sexual dimorphism between male and female *Pongo*.

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6. Do any features of the female *Pongo* skull change the way you've described primate relationships in question 4? For example, does the female *Pongo* appear human-like?

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7. Rank skull characteristics from least to most useful in deciding who is related to whom.

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8. We know that *Pan* (chimpanzee) and *Homo* (human) are most closely related of these primates. Did this exercise reflect that? Why or why not?

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9. In this case, we've used a skull to determine how five primates are related. What problems are associated with looking at only a single piece of evidence?

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## Part 2: Virtual zoo

10. Observe primates at Perth Zoo, or use the *Virtual zoo* interaction. Record your observations of characteristics and behaviour, in the species' passports provided. Then collate this information using the table on page 9. Notes for humans have been completed for you.

    Consider how each feature may be used to determine relatedness between these animals.

11. Has observation of living primates changed your view about who is most closely related to whom? Explain your answer.

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# Gorilla

*Gorilla gorilla*

**Individuals observed:**

☐ male ☐ female ☐ juvenile

**Lifestyle**

☐ arboreal ☐ terrestrial

**Main mode of locomotion**

**Sexual dimorphism** (eg body colouring)

**Ratio of arms to legs**

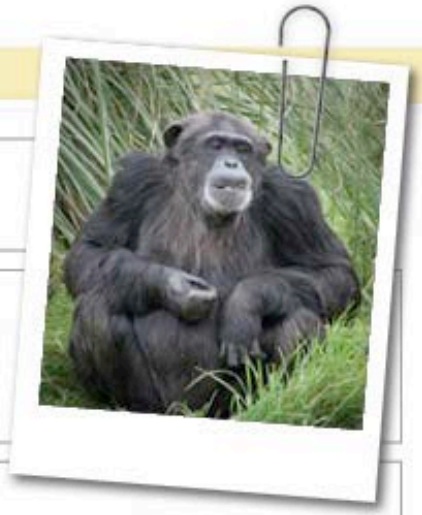
**Thumb length and opposability**

**Adaptations of foot to locomotion style**

**Social interactions**

**Object manipulation and tool use**

# Chimpanzee
*Pan troglodytes*



**Individuals observed:**
☐ male ☐ female ☐ juvenile

**Lifestyle**
☐ arboreal ☐ terrestrial

**Main mode of locomotion**

**Sexual dimorphism** (eg body colouring)

**Ratio of arms to legs**

**Thumb length and opposability**

**Adaptations of foot to locomotion style**

**Social interactions**

**Object manipulation and tool use**

# Gibbon
*Hylobates lar*

**Individuals observed:**
☐ male ☐ female ☐ juvenile

**Lifestyle**
☐ arboreal ☐ terrestrial

**Main mode of locomotion**

**Sexual dimorphism** (eg body colouring)

**Ratio of arms to legs**

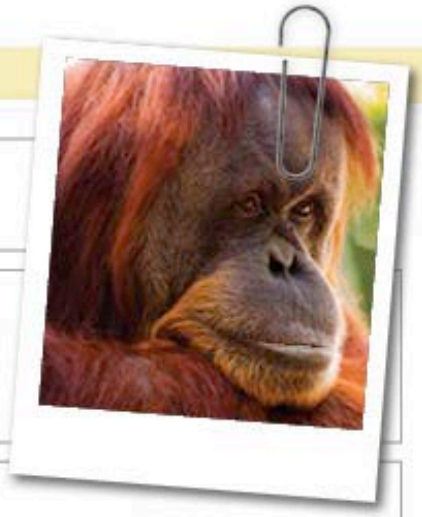
**Thumb length and opposability**

**Adaptations of foot to locomotion style**

**Social interactions**

**Object manipulation and tool use**

# Orang-utan
*Pongo abelii*



**Individuals observed:**
☐ male ☐ female ☐ juvenile

**Lifestyle**
☐ arboreal ☐ terrestrial

**Main mode of locomotion**

**Sexual dimorphism** (eg body colouring)

**Ratio of arms to legs**

**Thumb length and opposability**

**Adaptations of foot to locomotion style**

**Social interactions**

**Object manipulation and tool use**

| | OBSERVED CHARACTERISTIC OR BEHAVIOUR | | | | |
|---|---|---|---|---|---|
| | orang-utan | gibbon | chimpanzee | gorilla | human |
| ratio of arm to leg length | | | | | legs longer than arms |
| arboreal or terrestrial | | | | | terrestrial |
| thumb length and opposability | | | | | opposable |
| mode of locomotion | | | | | bipedal |
| foot adaptations to locomotion style | | | | | transverse and longitudinal arch |
| social interactions | | | | | living in groups, complex social rules |
| sexual dimorphism (eg colour) | | | | | minimal differences |
| object manipulation & tool use | | | | | advanced tool user |