

## Stellar Sat Nav

### Key Stage 3

**Topics covered:** Bearings, constellations

#### Teacher's Notes

In this activity, students will use bearings to plot constellations. They are then asked to think about what they represent.

**Equipment:** paper, pencil, protractor

#### Questions to ask the class before the activity:

What is a constellation?

Answer: a constellation is a pattern of stars in the sky. Many different systems were used across the world but the system we use was devised by the Greeks. There are 88 constellations in total.

Name some constellations that you know about.

Answer: the Plough is a common answer – this is actually an asterism which is a smaller pattern of stars. It is part of the larger constellation Ursa Major (Great Bear).

If you are facing north, your bearing is  $0^\circ$ , in which direction are you facing for the following bearings:  $90^\circ$ ,  $180^\circ$ ,  $270^\circ$ ,  $-45^\circ$ ,  $-225^\circ$ ?

Answer:  $90^\circ = E$ ,  $180^\circ = S$ ,  $270^\circ = W$ ,  $-45^\circ = NW$ ,  $-225^\circ = SW$

#### Questions to ask the class after the activity:

Are all of the stars in the sky the same?

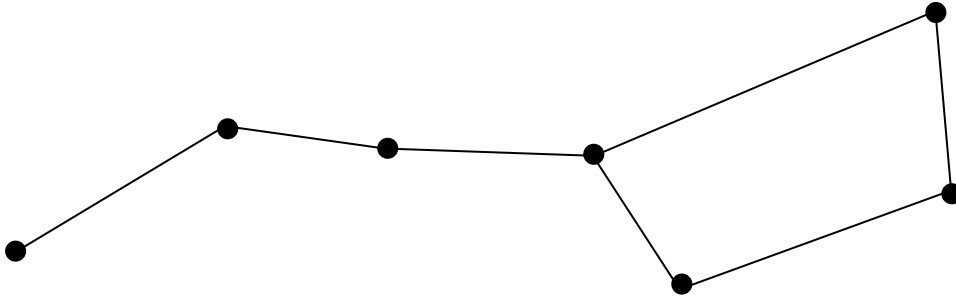
Answer: they all have different colours and sizes. Red stars are much cooler than blue stars.

Would your Sat Nav coordinates work from Andromeda, a galaxy 2.5 million light years away? Why not?

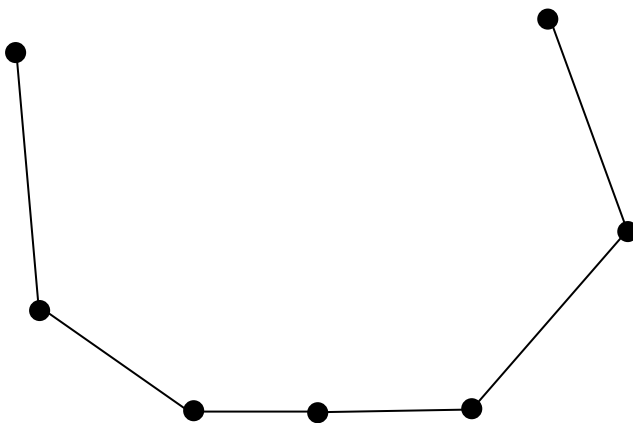
Answer: constellations look different from different positions in space, this is because the stars that make up the constellations are all situated at different distances from Earth.

## Stellar Sat Nav: Answers

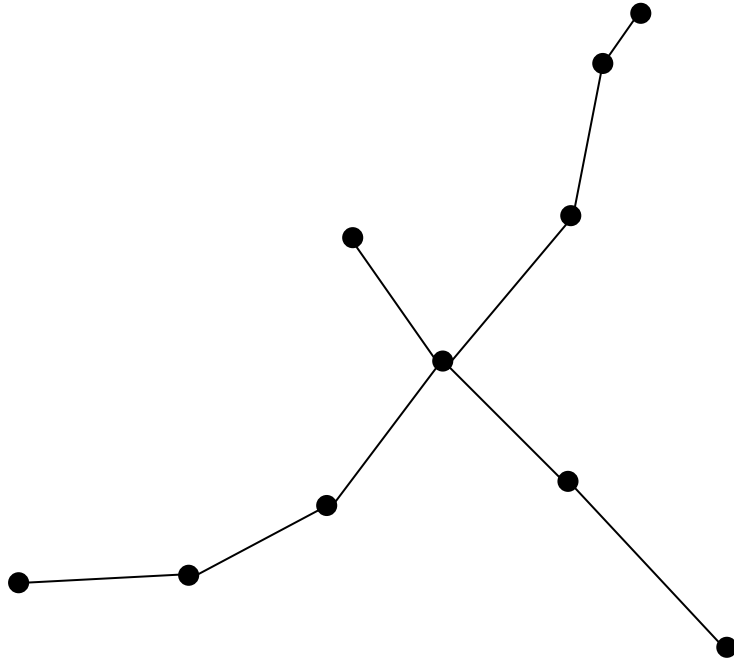
### Plough



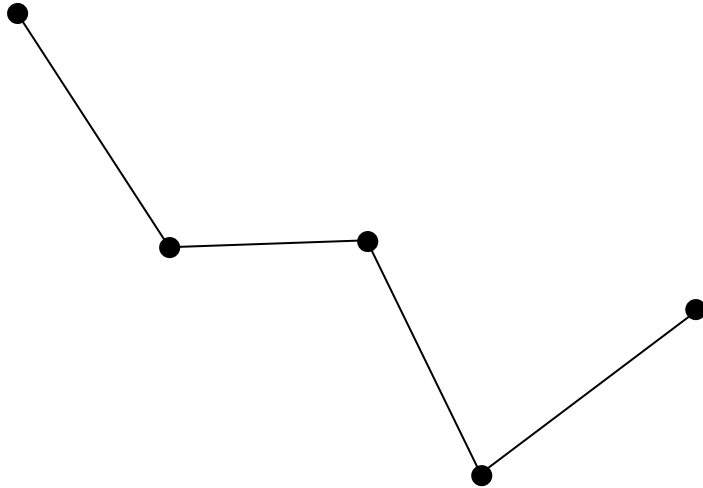
### Corona Borealis



Cygnus



Cassiopeia



## Activity: Stellar Sat Nav

Use the sat nav coordinates below to visit the stars.  
Draw the pattern of stars below and identify the constellation you have drawn.



### Constellation One

Start at star 1. Follow the directions below and label the stars:

Star 1 to Star 2: Take a bearing of  $59^\circ$  (north-east) and travel 3.3 cm. You have arrived at Star 2.

Star 2 to Star 3: Take a bearing of  $98^\circ$  (south-east) and travel 2.1 cm. You have arrived at Star 3.

Star 3 to Star 4: Take a bearing of  $92^\circ$  (south-east) and travel 2.7 cm. You have arrived at Star 4.

Star 4 to Star 5: Take a bearing of  $147^\circ$  (south-east) and travel 2.1 cm. You have arrived at Star 5.

Star 5 to Star 6: Take a bearing of  $70^\circ$  (north-east) and travel 3.8 cm. You have arrived at Star 6.

Star 6 to Star 7: Take a bearing of  $355^\circ$  (north-west) and travel 2.7 cm. You have arrived at Star 7. You have reached your destination.

### Constellation Two

Start at star 1. Follow the directions below and label the stars:

Star 1 to Star 2: Take a bearing of  $175^\circ$  (south-east) and travel 3.6 cm. You have arrived at Star 2.

Star 2 to Star 3: Take a bearing of  $125^\circ$  (south-east) and travel 2.4 cm. You have arrived at Star 3.

Star 3 to Star 4: Take a bearing of  $90^\circ$  (east) and travel 1.6 cm. You have arrived at Star 4.

Star 4 to Star 5: Take a bearing of  $89^\circ$  (east) and travel 2 cm. You have arrived at Star 5.

Star 5 to Star 6: Take a bearing of  $41^\circ$  (north-east) and travel 3.2 cm. You have arrived at Star 6.

Star 6 to Star 7: Take a bearing of  $340^\circ$  (north-west) and travel 3.2 cm. You have arrived at Star 7. You have reached your destination.

## Constellation Three

Start at star 1. Follow the directions below and label the stars:

Star 1 to Star 2: Take a bearing of  $87^\circ$  (north-east) and travel 2.2 cm. You have arrived at Star 2.

Star 2 to Star 3: Take a bearing of  $62^\circ$  (north-east) and travel 2.1 cm. You have arrived at Star 3.

Star 3 to Star 4: Take a bearing of  $37^\circ$  (north-east) and travel 2.5 cm. You have arrived at Star 4.

Star 4 to Star 5: Take a bearing of  $40^\circ$  (north-east) and travel 2.6 cm. You have arrived at Star 5.

Star 5 to Star 6: Take a bearing of  $11^\circ$  (north-east) and travel 2.2 cm. You have arrived at Star 6.

Star 6 to Star 7: Take a bearing of  $35^\circ$  (north-east) and travel 0.8 cm. You have arrived at Star 7. Return to star 4.

Star 4 to Star 8: Take a bearing of  $325^\circ$  (north-west) and travel 2 cm. You have arrived at Star 8. Return to star 4.

Star 4 to Star 9: Take a bearing of  $135^\circ$  (south-east) and travel 2.3 cm. You have arrived at Star 9.

Star 9 to Star 10: Take a bearing of  $137^\circ$  (south-east) and travel 2.9 cm. You have arrived at Star 9. You have reached your destination.

## Constellation Four

Start at star 1. Follow the directions below and label the stars:

Star 1 to Star 2: Take a bearing of  $147^\circ$  (south-east) and travel 3.6 cm. You have arrived at Star 2.

Star 2 to Star 3: Take a bearing of  $88^\circ$  (north-east) and travel 2.6 cm. You have arrived at Star 3.

Star 3 to Star 4: Take a bearing of  $154^\circ$  (south-east) and travel 3.4 cm. You have arrived at Star 4.

Star 4 to Star 5: Take a bearing of  $53^\circ$  (north-east) and travel 3.6 cm. You have arrived at Star 5. You have reached your destination.