The Habitable Zone

Solar Systems and Goldilocks!

Classroom Activity

Material List:

- 60 x 60 cm black paper (recommended)
- Spare paper (A4)
- A Star system information sheet
- Ruler
- Coloured pens/pencils
- Scissors
- Calculator
- Glue stick (optional)

Outline

Luckily for us Earth is orbiting the Sun in an area known as the habitable or 'goldilocks' zone. Not too hot and not too cold, the perfect condition for water, which is essential to life.

In this activity we will look at some other stars which all have planets orbiting them too. We will find out if any of the planets orbiting these other stars are in the habitable zone as well, seeing if they could have the potential to support life.

Procedure:

1. Read over the star information sheet you have been given.

2. Work together as a group to draw the axis of your diagram onto the large piece of paper, mark points along the axis at set spaces apart to represent distances from the centre.

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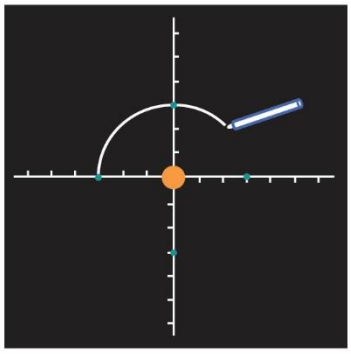
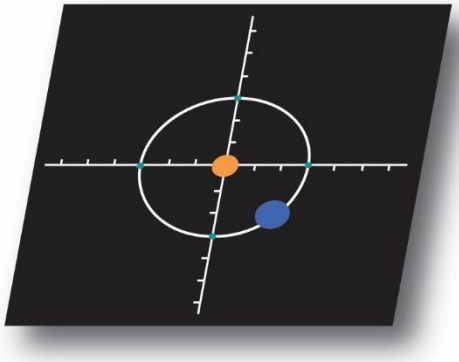
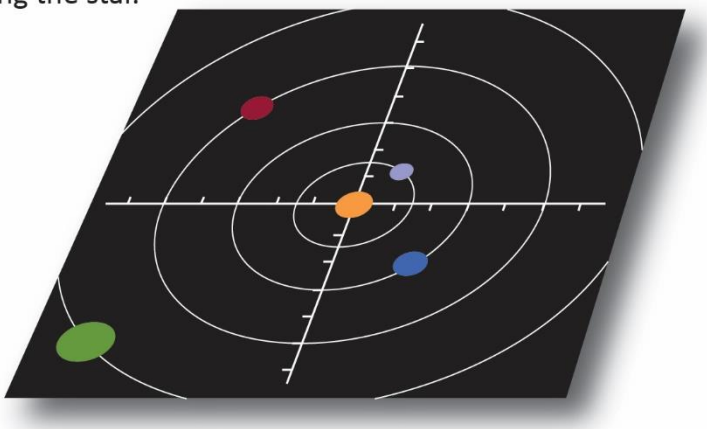
3 Cut out your star and each or your planets from the spare paper, labelling each one.

4 With the first of your planets, mark its orbit distance on each of the axis. Then connect each point to form a circle around the star. This is the planets 'orbit' so place your cut-out planet on the line.

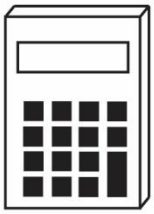


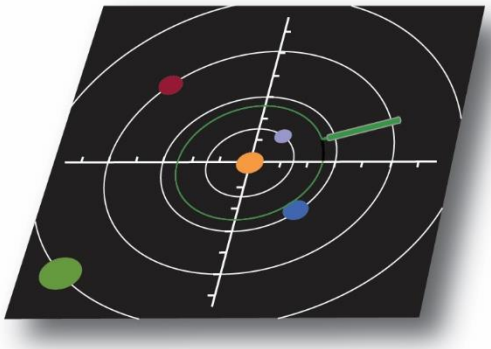


5 Repeat the process for each of your planets, until they are all orbiting the star.

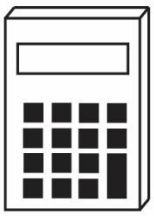


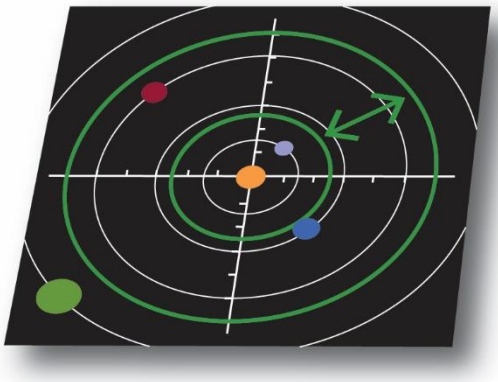
6 Calculate the inner edge of the habitable zone, the sum for this is given in your information sheet. In a different colour to your orbits, add this to your solar system diagram.





7 Calculate the outer edge of the habitable zone, the sum for this is given in your information sheet. In the same colour as the inner edge, add this to your solar system diagram.





8 Look at your diagram. How does the habitable zone fit around the planets?

Assessment:

- Which of the planets orbiting your star are in the habitable or 'goldilocks' zone?
- Which planets are too hot, and which are too cold?
- What other factors might affect if a planet in the habitable zone is appropriate for life?
- How does your star system compare to other groups?

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