

Grade 7 Natural Science Worksheet

Assessment Task: Earth Science: seasons

Seasons and tides

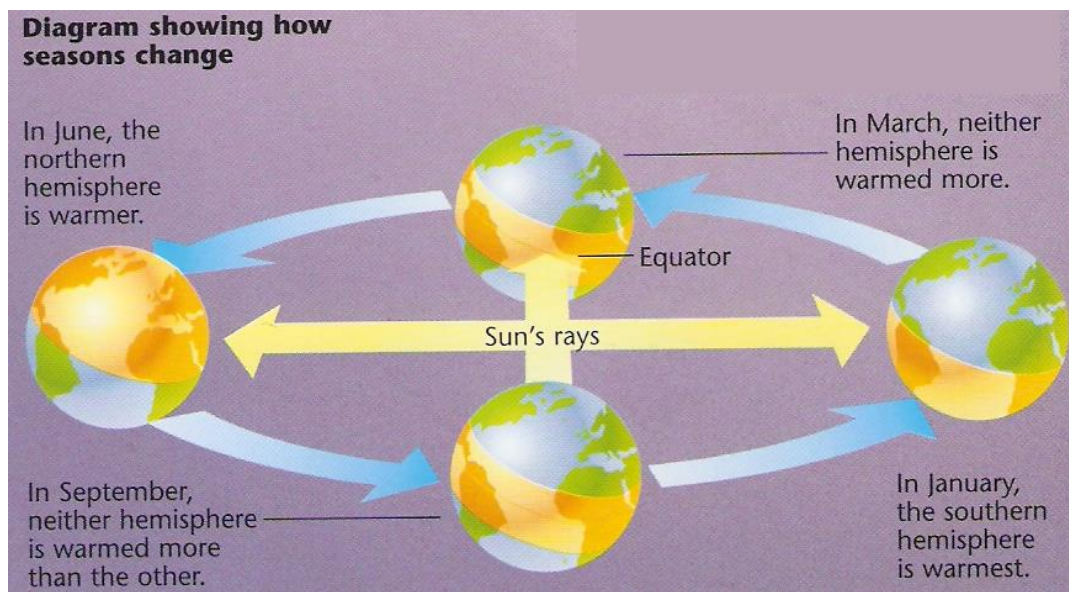
Part One: How seasons change

The orbiting of the earth and the moon has an enormous effect on our lives. On earth, time is a very important dimension. So many important things are measured according to time. Our measurement of time is directly related to two orbital patterns. Firstly, of course, our year is the time it takes for the earth to revolve around the sun. Secondly, our day is the time taken for the earth to rotate once on its axis.

But not only is our time measured in orbitals and rotations, so are our seasons.

Use the diagram below to write a paragraph explaining how it is that the earth experiences changing seasons, and that the seasons are different over the surface of the earth at any one time.

[10 marks]

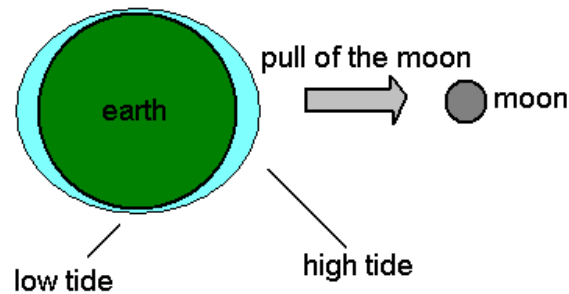


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Part Two: How tides are produced on earth

1. Use the diagram below to describe how tides are produced on earth.

[6 marks]



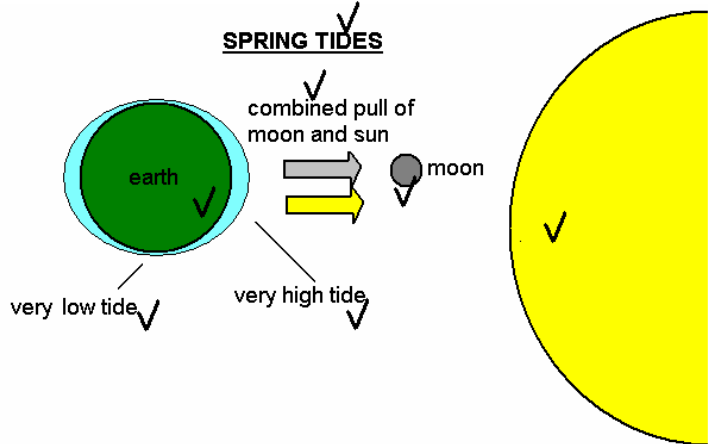
2. There are certain times when the moon and the sun are in alignment and they exert a combined pull on the waters of the earth. At this time the high tide is extra high and the low tide is extra low. This is called spring tides.

- Your first task is to draw a picture similar to the one drawn above that illustrates spring tides. Label it fully.
- Next, you must predict what you think will happen when the sun and the moon are at 90° to each other. Draw what you think this will look like and explain what you would expect the tides to be like. What is this type of tide called?

[14 marks]

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Suggested Solutions

Question number	Possible marks	Solution
1	10	Because the earth is tilted on its own axis ✓, as it revolves around the sun, ✓ there will be times of the year when parts of the earth's surface are tilted towards the sun. ✓ In these areas of the earth, it will be summer. ✓ The reverse face of the earth ✓ will be tilted away from the sun ✓ and it will be winter. ✓ Around the equator of the earth, ✓ the tilting effect is not as pronounced ✓ and these areas receive similar amounts of light and heat throughout the year. ✓ This also explains why the northern and southern hemispheres of the earth experience summer and winter at opposite times of the year. ✓
2.1	6	The moon orbiting the earth has a very important impact on ocean tides. ✓ Tides are caused by the pull of gravity between the earth, ✓ the moon ✓ and the sun. ✓ Because the oceans are liquid, they are strongly influenced by this gravitational pull ✓ and they bulge from the surface of the earth in response to gravitational pull. ✓ As the earth rotates, the tidal bulge of water being pulled towards the moon ✓ stays in the same place under the moon. ✓ But of course the earth is rotating so each place on earth has a high tide twice a day. ✓
2.2	14	 <p style="text-align: center;">SPRING TIDES</p>

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