# Trace the Seismic Waves



When seismic waves travel through the Earth they will encounter different densities.

**A change in density results in a change in velocity of the wave and causes seismic waves to refract, reflect or even convert into a different type of seismic wave!**

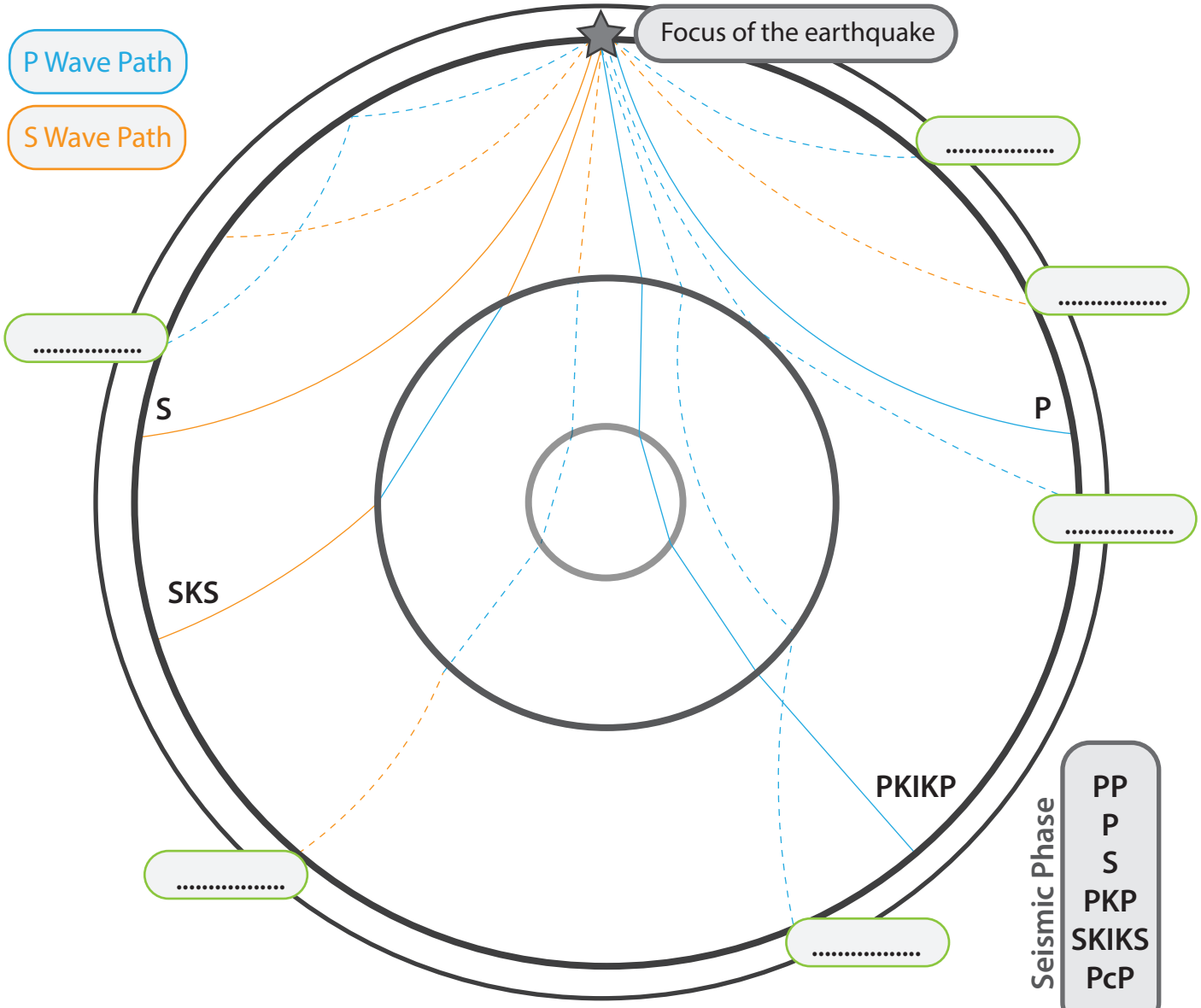
There are many possible paths a wave can take through the Earth, e.g. through the mantle, reflected off the core and then travelling through the mantle again. Each unique path will create a seperate seismic phase which can be identified on a seismogram.

**A seismic phase can be decribed by one or more letters that describes its path through the Earth.**

Seismograms can be used to identify P and S waves but also each of the seperate phases, so they can be used to identify waves and tell where that wave has been in the Earth!

| Symbol | Definition |
|---|---|
| *P* | A P wave in the crust or mantle. |
| *S* | An S wave in the crust or mantle. |
| *p* | A P wave travelling upwards from the focus of the earthquake and reflected down from the Earth's surface. |
| *s* | An S wave travelling upwards from the focus of the earthquake and reflected down from the Earth's surface. |
| *c* | Reflection at the mantle-core boundary. |
| *K* | A P wave in the outer core. |
| *I* | A P wave in the inner core. |
| *i* | Reflection at the outer core-inner core boundary. |
| *J* | An S wave in the inner core. |

Follow the seismic paths shown below and fill in the correct seismic phase in each box.
Use the table and examples shown to help you identify the seismic phases.




Challenge yourself: Draw the following seismic phases on the diagram above: pPcS, pSSS, PKiKP, sPcS, sSS.

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