Target: I can describe how intermolecular forces affect properties
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Properties due to Intermolecular Forces
**Vocabulary**

**INTRA**molecular Forces
Forces holding together the atoms **INSIDE** a molecule or compound. What we usually think of as “bonds.” Relatively strong.
**Types:** Ionic forces, covalent forces

**INTER**molecular Forces
Attractions or repulsions which act **between neighboring molecules.** Holds different molecules next to each other. Very weak. Not strong enough to be called real “bonds.”
Use dotted lines to represent an intermolecular force. They are much much weaker than a real “bond” so we want to show that somehow – the dotted line emphasizes the fact that it is weaker.

If there are lots of intermolecular forces (or IMF to abbreviate) then the molecules will be held near each other like a bunch of magnets. The more IMFs, the stronger they are being held near each other. The harder it is to separate the molecules from each other.
Some properties that relate to intermolecular forces

| • Boiling point | When you increase IMFs the properties increase too! The more forces present, the higher property values will be. It will boil at a higher temp, it will melt at a higher temp, it will be thicker (more viscous), higher surface tension. All because it will be harder to separate the molecules. |
| • Melting point | |
| • Viscosity | |
| • Surface tension | |
Some properties that relate to intermolecular forces

Not all substances will mix with all other substances – think oil and water. They don’t mix! Polar substances like to mix with other polar substances. Non-polar substances like to mix with non-polar substances. Polar and non-polar don’t mix. We have a phrase we use to remind ourselves of this – “like dissolves like” or “like mixes with like.”

<table>
<thead>
<tr>
<th>Miscibility (Mixing)</th>
<th>“Like dissolves like”</th>
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<tbody>
<tr>
<td></td>
<td>Polar mixes with polar</td>
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