Remember that one of the characteristics of life is that the species must be able to reproduce? This next few slides will be familiar.

What were the 2 types of reproduction? Do you remember?
Sexual & Asexual Reproduction
Sexual Reproduction:
Sex cells needed (egg/sperm)

Offspring are a combination of the genetic material of the parents.
Living organisms come in all shapes and sizes. Some organisms (like animals and plants) are made of many cells that work together to continually divide and replace themselves to continue the process of growing, taking in nutrients, reproducing by sexual reproduction, etc. Other organisms are single-celled and microscopic (microorganisms) and have different functions on their own while reproducing asexually.

Sexual reproduction involves two parents that both contribute genetic information (DNA) to produce unique offspring. This is done by male and female sex cells uniting and being fertilized to create a new offspring. In sexual reproduction, half of the offspring's DNA comes from the mom and half comes from the dad. Each parent has their own unique set of chromosomes (23 pairs/46 total). During reproduction, the male sends half of his chromosomes to the offspring and the female does the same creating a brand new organism with a new combination of chromosome pairs. Because two parents are contributing genetic information to the offspring, all offspring have many variations in their traits. Even multiple offspring from the same parents have variations between them (think of siblings!). An offspring is never an exact replica of either of the parents in sexual reproduction, although they share similar traits. Bears, humans, butterflies, and sunflowers all reproduce sexually.
Asexual Reproduction:
no sex cells (egg or sperm) necessary

Offspring is a clone of the parent: same exact DNA
Asexual reproduction generates offspring that is genetically identical to a single parent. During this process a single-celled organism makes an exact copy or replica of itself. The offspring is identical to the single parent. Bacteria, amoebas, and certain types of fungus (like yeast) reproduce asexually. There are a couple different ways organisms undergo asexual reproduction. Binary fission is a process where one cell simply copies itself and splits into two daughter cells. Bacteria mainly reproduces in this way. Budding is similar to binary fission, but occurs in plants and animals that can't replicate like bacteria can. During budding, a small part of the plant or animal buds and then breaks off and grows on its own until the parent and offspring are the same size. Most flatworms, corals, and an aquatic plant called hydra reproduce by budding.

There are advantages and disadvantages of each type of reproduction. For example, sexual reproduction results in genetic variation in offspring where asexual reproduction results in exact replicas of parent cells. On the other hand, asexual reproduction does not need a mate and reproduction can happen very quickly. Some organisms use BOTH asexual and sexual reproduction. For example, fungi such as mushrooms have the ability to reproduce sexually or asexually through process called fragmentation (where part of the mushroom breaks off and regenerates) or spreading spores which contain their own genetic information. Strawberries have runners that can reproduce asexually, but they also can be pollinated like other plants to reproduce sexually. Both sexual and asexual reproduction result in the passing of genes from parent to offspring, but they have major differences that result in advantages and disadvantages of each type.
Is it essential for an individual to reproduce?

No. However, the *species* does need to reproduce.
Must have DNA that may change over time (evolve)

Sexual reproduction: DNA of the offspring (babies) is a combination of mom’s and dad’s DNA.

Asexual reproduction: DNA is the same in parent and daughter cell.

Lots more about DNA later!!!!!!!
Edpuzzles in GC: Sexual and Asexual Reproduction
<table>
<thead>
<tr>
<th>Sexual Reproduction</th>
<th>Asexual Reproduction</th>
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<tbody>
<tr>
<td><strong>What is it and how does it work?</strong></td>
<td><strong>What is it and how does it work?</strong></td>
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<td>Cause and effect</td>
<td>Cause and effect</td>
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<td>Examples</td>
<td>Examples</td>
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Prompt Response:

Sexual reproduction is

Asexual reproduction is
**Instructions:**
Drag the pictures to the correct place to show if the organism reproduces sexually, asexually or both.

<table>
<thead>
<tr>
<th>Sexual</th>
<th>Asexual</th>
<th>Both</th>
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Writing Prompt: Explain the difference between the offspring of sexual reproduction and the offspring of asexual reproduction.