Name _____

Gap Analysis - Trade-offs Between Small and Big AI Models

Large Language Models, or LLMs, come in different sizes, and the choice between a **small** or a **big** model always involves trade-offs. A trade-off means that gaining one strength often comes with giving up something else.

Small models are designed to be light, fast, and affordable. They can run directly on laptops or even smartphones without needing an internet connection. This makes them useful in classrooms, homes, and small businesses where resources are limited. Their efficiency comes at a cost: small models are less skilled at deep reasoning, advanced problem-solving, or highly accurate translations.

Big models are trained with billions or even trillions of parameters. They are powerful enough to provide detailed explanations, generate nuanced responses, and switch easily between multiple languages. But their size also creates disadvantages. Big models require powerful servers, large amounts of electricity, and greater expense. They are slower to respond and cannot run directly on small devices.

Despite these differences, small and big models share important similarities. Both can summarize text, answer questions, and assist with writing. Both can also make mistakes that sound convincing but are actually wrong. For this reason, users must always think critically about AI outputs, no matter which type of model they choose.

Instructions: Fill in each blank with the correct words. Use the passage above to help you.

1) _____ models are best for running directly on laptops or smartphones because they use less _____.

2) _____ models can provide very detailed explanations, but they require powerful _____ to run.

3) When money and speed are the priority, _____ models are the better choice.

4) When complex reasoning and depth are needed, _____ models are the better choice.

5) Schools in rural areas with weak internet connections may prefer _____ models.

6) Researchers who need accurate translations across many languages may prefer _____.

7) Both small and big models are able to help with _____, but both can also make _____.

8) Choosing between small and big models is not about which one is "better," but about which one _____ the specific _____.