

STUDENT: **What is the unproven assumption generally ascribed to the value of complexity classes?**

TEACHER: \hookrightarrow suspected to be unequal

STUDENT: **What is an expression that can be used to illustrate the suspected inequality of complexity classes?**

TEACHER: \hookrightarrow $P \not\subseteq NP \not\subseteq PP \not\subseteq PSPACE$

STUDENT: **Where can the complexity classes RP, BPP, PP, BQP, MA, and PH be located?**

TEACHER: \hookrightarrow between P and PSPACE

STUDENT: **What evidence between and among complexity classes would signify a theoretical watershed for complexity theory?**

TEACHER: \hookrightarrow Proving that any of these classes are unequal

STUDENT: **What is the proven assumption generally ascribed to the value of complexity classes?**

TEACHER: \hookrightarrow CANNOTANSWER

STUDENT: **What is an expression that can be used to illustrate the suspected in equality of complexity classes?**

TEACHER: \hookrightarrow CANNOTANSWER

STUDENT: **Where can complexity classes RPP, BPP, PPP, BQP, MA, and PH be located?**

TEACHER: \hookrightarrow CANNOTANSWER

STUDENT: **What is impossible for the complexity classes RP, BPP, PP, BQP, MA, and PH?**

TEACHER: \hookrightarrow CANNOTANSWER

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Context: Many known complexity classes are suspected to be unequal, but this has not been proved. For instance $P \not\subseteq NP \not\subseteq PP \not\subseteq PSPACE$, but it is possible that $P = PSPACE$. If P is not equal to NP , then P is not equal to $PSPACE$ either. Since there are many known complexity classes between P and $PSPACE$, such as RP , BPP , PP , BQP , MA , PH , etc., it is possible that all these complexity classes collapse to one class. Proving that any of these classes are unequal would be a major breakthrough in complexity theory. CANNOTANSWER

STUDENT: **What would not be a major breakthrough in complexity theory?**
TEACHER: \hookrightarrow CANNOTANSWER