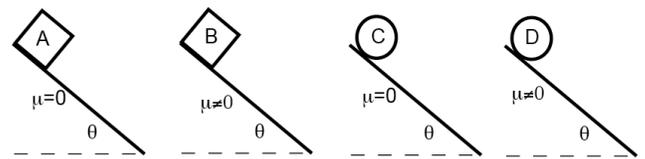


Consider a wheel rolling without slipping down a slanted surface with friction.
Which of the following is true?

- 1) The linear acceleration of the wheel along the incline can be calculated from the component of gravity in that direction minus the effect of friction.
- 2) The total kinetic energy of the wheel at any point can be calculated from the change in potential energy due to gravity minus the work done by friction.
- 3) The normal force on the wheel due to the surface has no effect on either the acceleration along the incline or the kinetic energy of the wheel.
- 4) (1) & (2) are true.
- 5) (1) & (3) are true.
- 6) (2) & (3) are true.
- 7) All three of (1), (2), and (3) are true.
- 8) None of the above are true.

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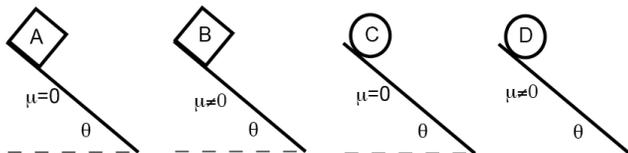
Four objects travel the same distance down four inclines all tilted at the same angle. Objects A and B are blocks that slide, while objects C and D are round and D rolls without slipping. Inclines A and C have $\mu=0$, inclines B and D have some friction.

In moving from the top to the bottom, which object has the **biggest** change in **potential energy**?

- 1) A
- 2) B
- 3) C
- 4) D
- 5) A & B
- 6) A & C
- 7) B & D
- 8) C & D
- 9) A, C, & D
- 10) All 4 are the same

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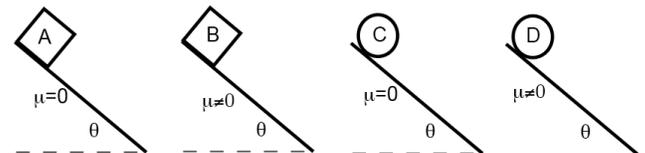
Four objects travel the same distance down four inclines all tilted at the same angle. Objects A and B are blocks that slide, while objects C and D are round and D rolls without slipping. Inclines A and C have $\mu=0$, inclines B and D have some friction.

In moving from the top to the bottom, which object has the **biggest** change in **total kinetic energy**?

- 1) A
- 2) B
- 3) C
- 4) D
- 5) A & B
- 6) A & C
- 7) B & D
- 8) C & D
- 9) A, C, & D
- 10) All 4 are the same

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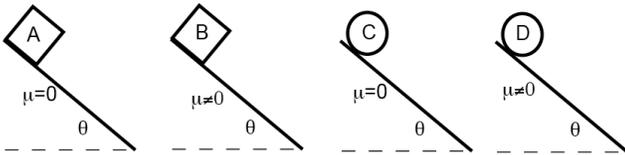
Four objects travel the same distance down four inclines all tilted at the same angle. Objects A and B are blocks that slide, while objects C and D are round and D rolls without slipping. Inclines A and C have $\mu=0$, inclines B and D have some friction.

In moving from the top to the bottom, which object has the **smallest** change in **total kinetic energy**?

- 1) A
- 2) B
- 3) C
- 4) D
- 5) A & B
- 6) A & C
- 7) B & D
- 8) C & D
- 9) A, C, & D
- 10) All 4 are the same

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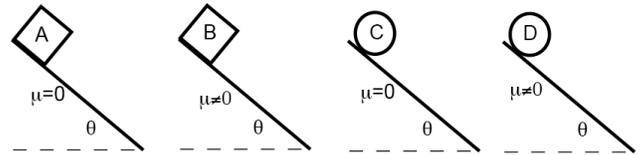
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Four objects travel the same distance down four inclines all tilted at the same angle. Objects A and B are blocks that slide, while objects C and D are round and D rolls without slipping. Inclines A and C have $\mu=0$, inclines B and D have some friction.

In moving from the top to the bottom, which object has the **biggest** change in **linear kinetic energy**?

- 1) A
- 2) B
- 3) C
- 4) D
- 5) A & B
- 6) A & C
- 7) B & D
- 8) C & D
- 9) A, C, & D
- 10) All 4 are the same



Four objects travel the same distance down four inclines all tilted at the same angle. Objects A and B are blocks that slide, while objects C and D are round and D rolls without slipping. Inclines A and C have $\mu=0$, inclines B and D have some friction.

In moving from the top to the bottom, which object has the **smallest** change in **linear kinetic energy**?

- 1) A
- 2) B <= this is the answer, see In-Class on Jan 20.
- 3) C
- 4) D
- 5) A & B
- 6) A & C
- 7) B & D (Found later that B is always smaller.)
- 8) C & D
- 9) A, C, & D
- 10) All 4 are the same