

Stability

Bands 1, 2, 3, 4, 5 · 10 questions · Free sample

Name _____ Date _____ Score _____ /10

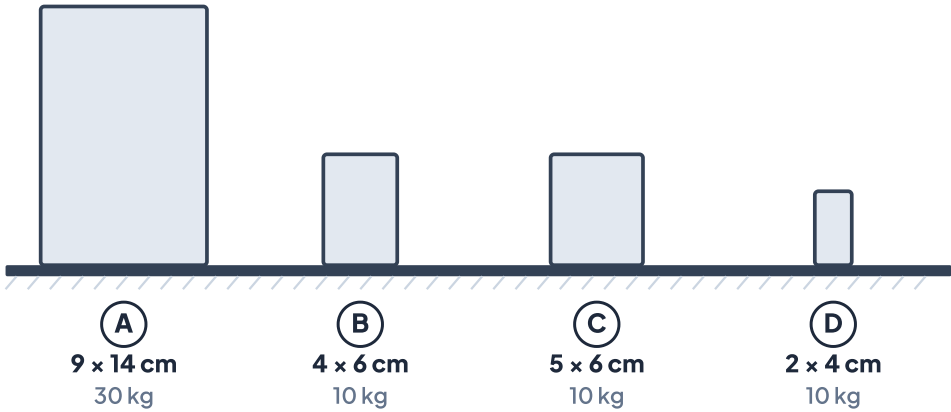
Each picture asks its own question. A body tips when the line down from its centre of gravity leaves its base: a uniform box tips at width over height. The centre of gravity of blocks or of a flat plate is the average of the parts' centres, each counted by its weight or area. Circle the letter of your answer.

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1 Band 1

Which box is the hardest to tip over?

uniform boxes, drawn to scale



☐ A **A**

☐ B **B**

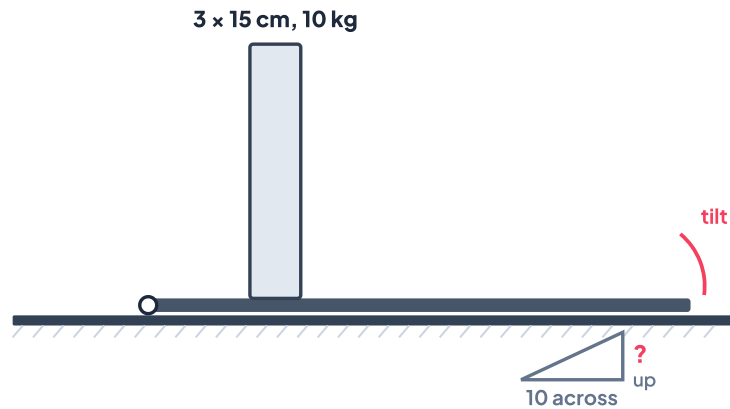
☐ C **C**

☐ D **D**

2

Band 1

The board is tilted until the box tips. What gradient is that?



a uniform box on a hinged board

(A)

1 in 10

(B)

2 in 10

(C)

3 in 10

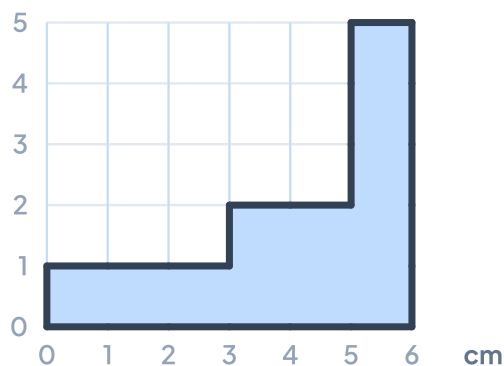
(D)

50 in 10

3

Band 2

How far is the centre of gravity from the left edge?



distances are measured from the left edge

(A)

4 cm

(B)

5 cm

(C)

6 cm

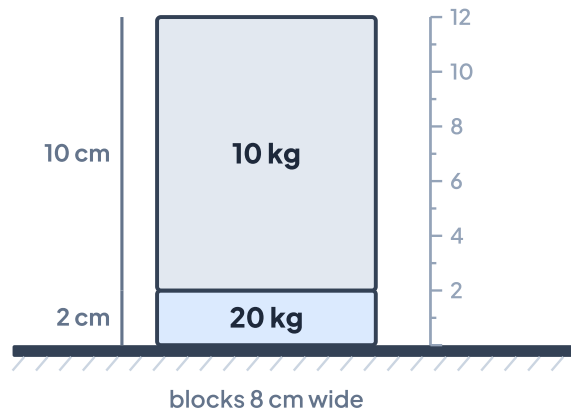
(D)

7 cm

4

Band 2

How high above the table is the centre of gravity?



(A)

1 cm

(B)

2 cm

(C)

3 cm

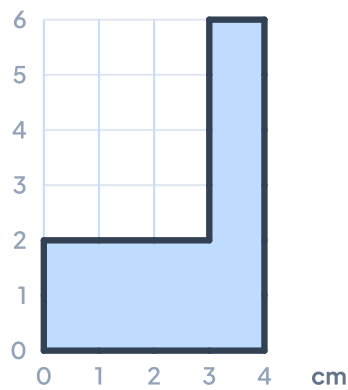
(D)

6 cm

5

Band 3

How far is the centre of gravity from the bottom edge?



distances are measured from the bottom edge

(A)

1 cm

(B)

2 cm

(C)

3 cm

(D)

4 cm

6

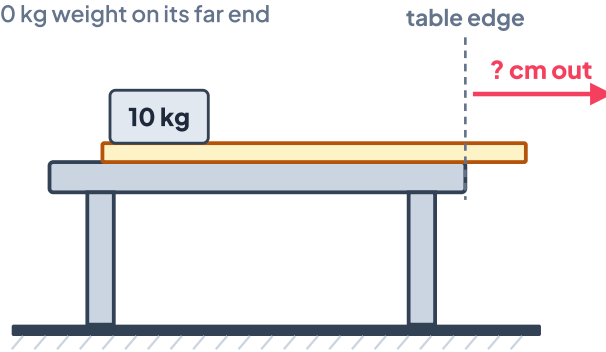
Band 3

How far out can the plank be pushed before it tips?

(not to scale; the plank is pushed out until it tips)

plank: 14 cm long, 4 kg (uniform)

a 10 kg weight on its far end



A

12 cm

B

18 cm

C

24 cm

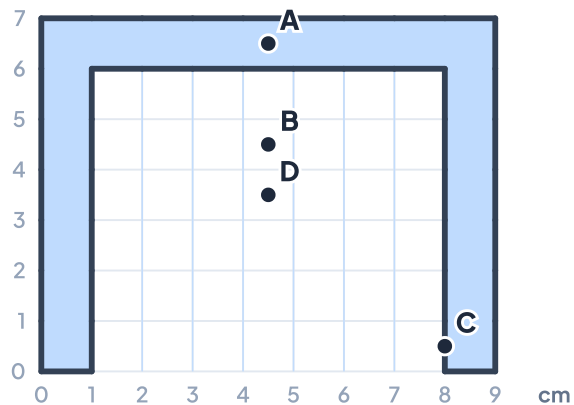
D

36 cm

7

Band 4

Which point is the centre of gravity of the plate?



A

A

B

B

C

C

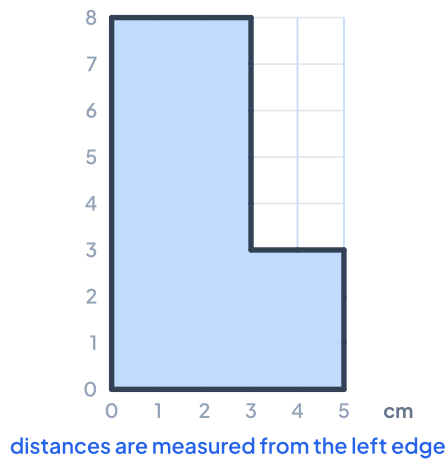
D

D

8

Band 4

How far is the centre of gravity from the left edge?



A

1 cm

B

2 cm

C

3 cm

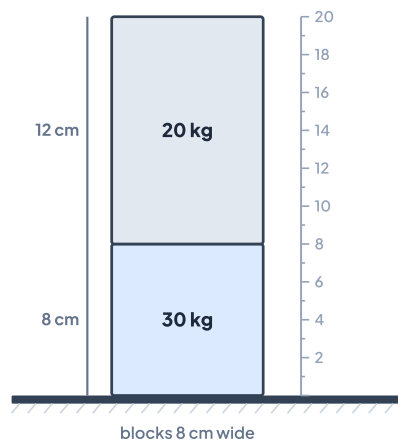
D

4 cm

9

Band 5

The board is tilted until the pile tips. What gradient is that?



A

2 in 10

B

3 in 10

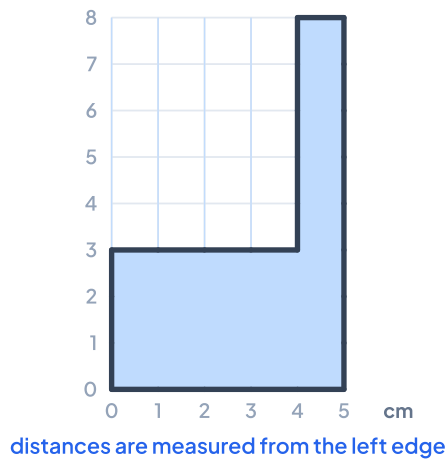
C

4 in 10

D

5 in 10

How far is the centre of gravity from the left edge?



A

1 cm

B

2 cm

C

3 cm

D

4 cm

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