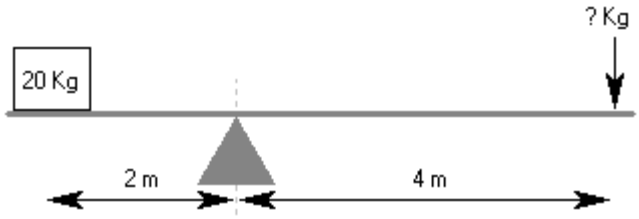
Mechanical Reasoning – Test 2

40 Questions
Answer as many questions as you can in 30 minutes. Circle the letter below the question which corresponds to the correct answer. You are advised to use a calculator.

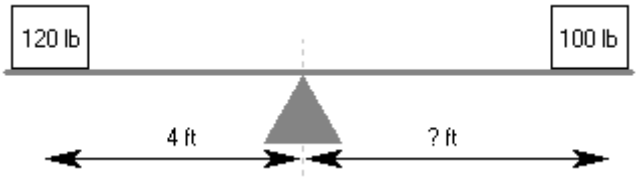
1) How much weight is required to balance the lever?



A	B	C	D	E
15Kg	5Kg	10Kg	7.5Kg	20Kg

A B C D E

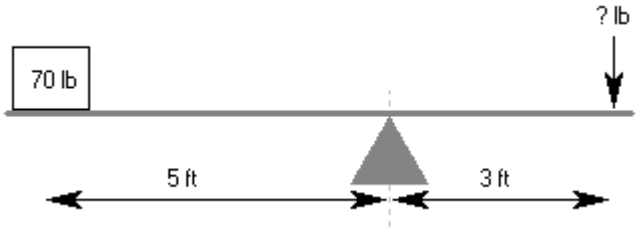
2) How far from the fulcrum does the 100 lb weight need to be to just tip the lever?



A	B	C	D	E
4 ft 8 inches	4 ft 6 inches	5 ft	4 ft 10 inches	4 ft

A B C D E

3) How much weight is required to just tip the lever?



A	B	C	D	E
115 lbs	112 lbs	118 lbs	116 lbs	117 lbs

A B C D E

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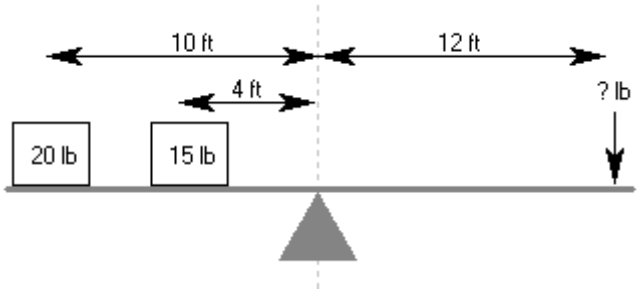
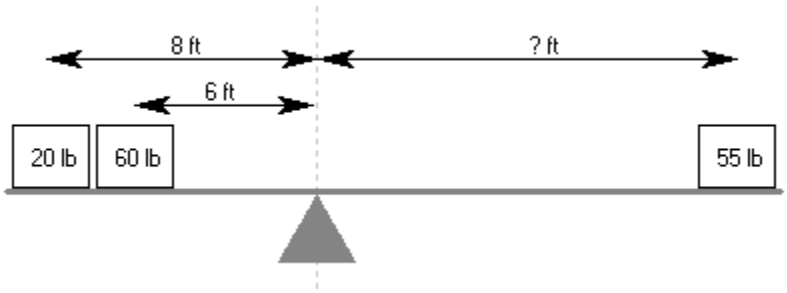
4) How much weight is required to just tip the lever?



A	B	C	D	E
22 lbs	25 lbs	28 lbs	40 lbs	35 lbs

A B C D E

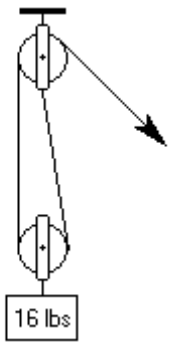
5) How far from the fulcrum does the 55 lb weight need to be to just tip the lever?



A	B	C	D	E
6 ft	9 ft 6 inches	10 ft 6 inches	8ft 6 inches	10 ft

A B C D E

6) Approximately how much force is needed to lift the weight?



A	B	C	D	E
9 lbs	8 lbs	6 lbs	4 lbs	16 lbs

A B C D E

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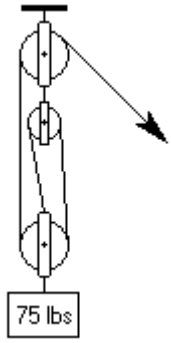
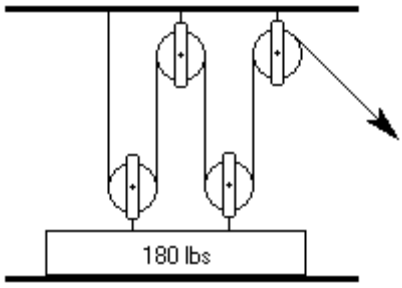
7) Approximately how much force is needed to lift the weight?



A	B	C	D	E
75 lbs	35.5 lbs	25 lbs	50 lbs	15 lbs

A B C D E

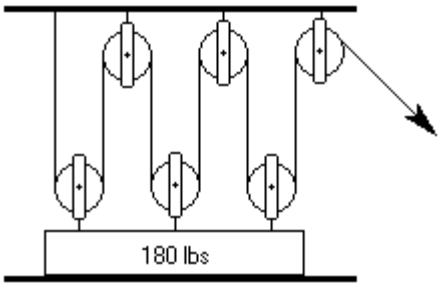
8) Approximately how much force is needed to lift the weight?



A	B	C	D	E
30 lbs	45 lbs	60 lbs	90 lbs	120 lbs

A B C D E

9) Approximately how much force is needed to lift the weight?

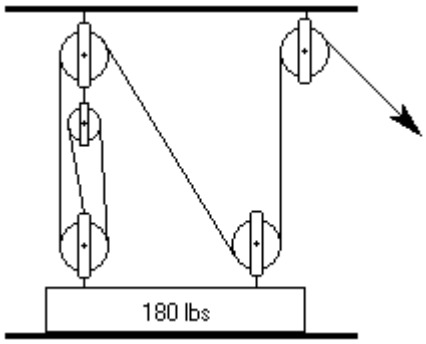


A	B	C	D	E
15 lbs	30 lbs	45 lbs	60 lbs	90 lbs

A B C D E

Mechanical Reasoning – Test 2

10) Approximately how much force is needed to lift the weight?



A	B	C	D	E
30 lbs	36 lbs	45 lbs	60 lbs	90 lbs

A B C D E

11) If gear X turns clockwise at a constant speed of 10 rpm. How does gear Y turn?

A	B	C	D	E
anti c/w 10 rpm	c/w 10 rpm	c/w 5 rpm	anti c/w 5 rpm	c/w 20 rpm

A B C D E

12) If gear X turns clockwise at a constant speed of 10 rpm. How does gear Y turn?

A	B	C	D	E
anti c/w 10 rpm	c/w 10 rpm	c/w 5 rpm	anti c/w 5 rpm	anti c/w 20 rpm

A B C D E

Mechanical Reasoning – Test 2

13) If gear X turns clockwise at a constant speed of 10 rpm. How does gear Y turn?

A	B	C	D	E
anti c/w 10 rpm	c/w 10 rpm	c/w 20 rpm	anti c/w 5 rpm	anti c/w 20 rpm

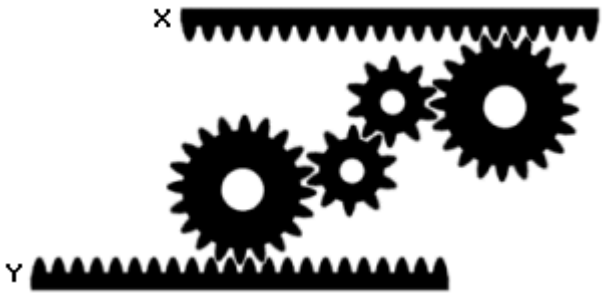
A B C D E

14) If gear X turns clockwise at a constant speed of 10 rpm. How does gear Y turn?

A	B	C	D	E
anti c/w 10 rpm	c/w 10 rpm	c/w 5 rpm	anti c/w 5 rpm	c/w 20 rpm

A B C D E

15) If bar Y moves left a constant speed. How does bar X move?

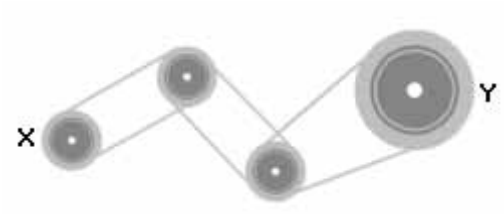


A	B	C	D	E
Left, Faster	Right, Same	Left, Slower	Left, Same	Right, Slower

A B C D E

Mechanical Reasoning – Test 2

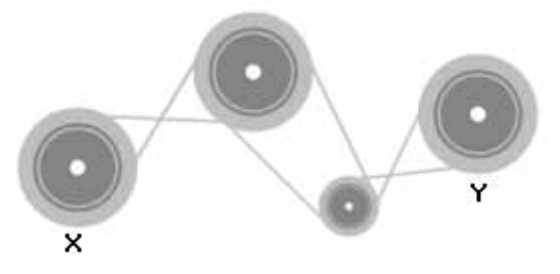
16) If drive wheel X rotates clockwise at a speed of 10 rpm. How does wheel Y turn?



A	B	C	D	E
anti c/w faster	c/w slower	c/w faster	anti c/w slower	anti c/w same

A B C D E

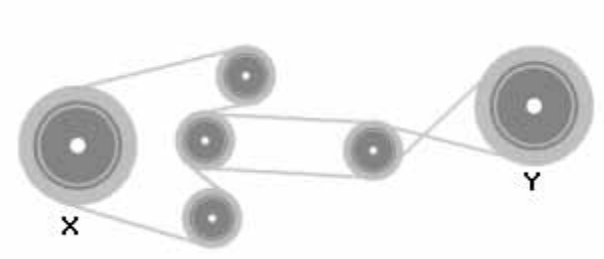
17) If drive wheel X rotates clockwise at a speed of 10 rpm. How does wheel Y turn?



A	B	C	D	E
anti c/w faster	c/w slower	c/w faster	anti c/w slower	c/w same

A B C D E

18) If drive wheel X rotates clockwise at a speed of 10 rpm. How does wheel Y turn?

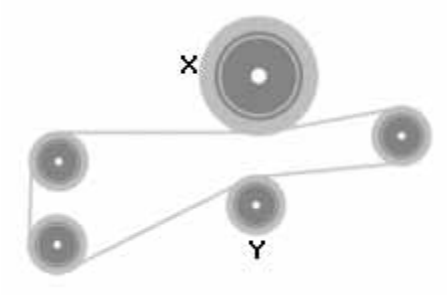


A	B	C	D	E
anti c/w faster	c/w slower	c/w faster	anti c/w slower	c/w same

A B C D E

Mechanical Reasoning – Test 2

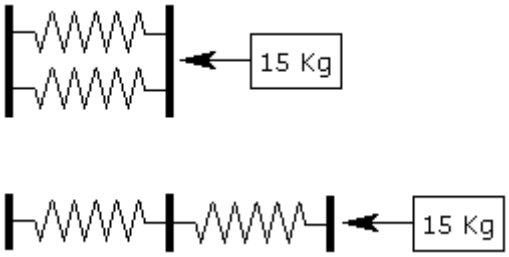
19) If drive wheel X rotates clockwise at a speed of 10 rpm. How does wheel Y turn?



A	B	C	D	E
anti c/w faster	c/w slower	c/w faster	anti c/w slower	c/w same

A B C D E

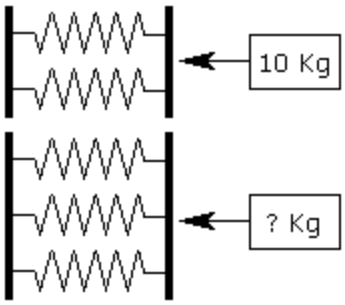
20) A force of 15 Kg compresses the parallel in series 10cm. What will be the total distance that the springs in series are compressed?



A	B	C	D	E
10 cms	5 cms	20 cms	7.5 cms	15 cms

A B C D E

21) A force of 10 Kg compresses the two springs in parallel 10cm. How much force is required to compresses three springs in parallel 10cm?

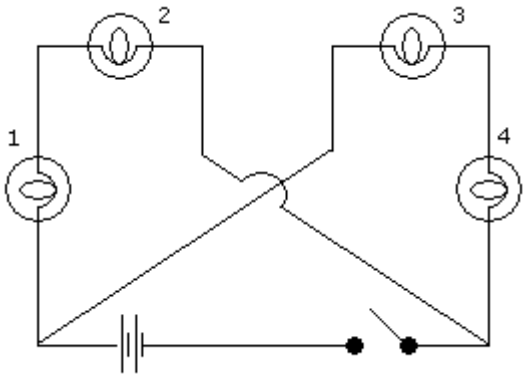


A	B	C	D	E
5 Kg	10 Kg	7.5 Kg	12 Kg	15 Kg

A B C D E

Mechanical Reasoning – Test 2

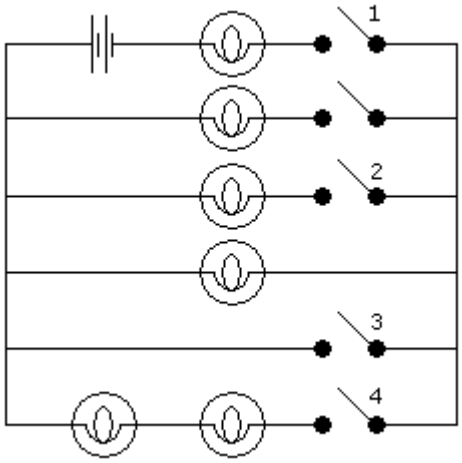
22) If bulb 1 is removed, how many bulbs will light up when the switch is closed?



A	B	C	D	E
None	One	Two	Three	Four

A B C D E

23) How many bulbs will light when switches 1, 2, 3 and 4 are closed?



A	B	C	D	E
None	One	Two	Three	Four

A B C D E

Mechanical Reasoning – Test 2

24) Which is the most suitable tool for general carpentry?

A	B	C	D	E
None	1	2	3	4

A B C D E

25) Which is the most suitable tool for general metalwork?

A	B	C	D	E
None	1	2	3	4

A B C D E

Mechanical Reasoning – Test 2

26) Which tool or combination of tools would be most useful for fitting an entertainment system to a vehicle?

A	B	C	D	E
1 & 9	6	8	2 & 8	9

A B C D E

27) Which tool or combination of tools would be most useful for constructing a mild steel frame?

A	B	C	D	E
3 & 4	9	1 & 9	2 & 8	6

A B C D E

28) Which tool or combination of tools would be most useful for masonry work?

A	B	C	D	E
3	6	4	7	2

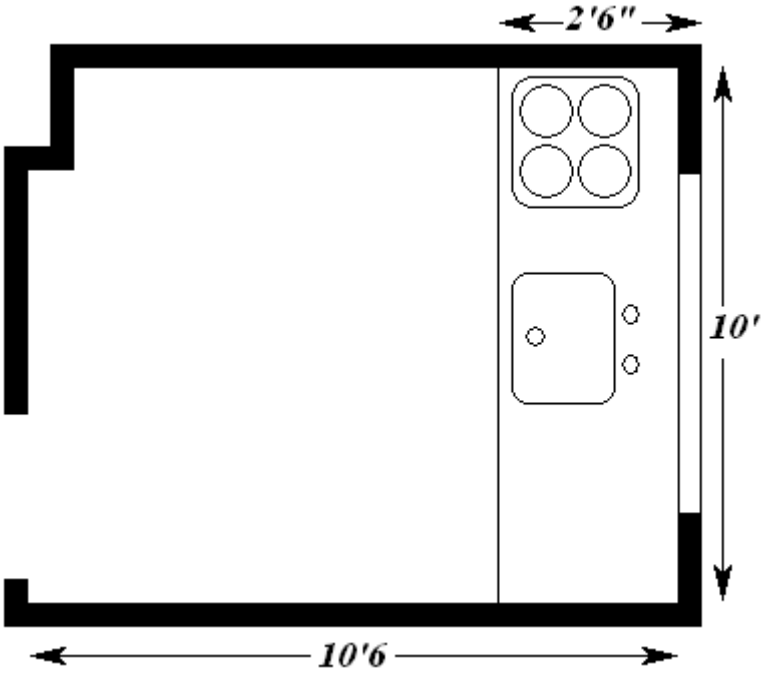
A B C D E

29) Which tool or combination of tools would be most useful for fitting a wooden door?

A	B	C	D	E
3,5 & 7	1 & 9	2, 3 & 4	4, 6 & 7	4 & 6

A B C D E

Mechanical Reasoning – Test 2



The sketch shows the floor plan of a kitchen. The kitchen units and worktop project 2' 6" from the wall at a height of 36". The window is 7 feet wide and 4 feet high – it is flush with the level of the worktop. The ceiling is 8 feet high. The specification requires 6" x 6" decorative tiles to be fitted above the worktop on three sides to a height of 24".

30) Allowing for 15% wastage, approximately how many tiles should be ordered?

A	B	C	D	E
82	74	64	70	80

A B C D E

31) The door measures 7' x 2'6". Calculate the remaining wall area in square feet (i.e. the area that has not been tiled)

A	B	C	D	E
268	144	306	221	180

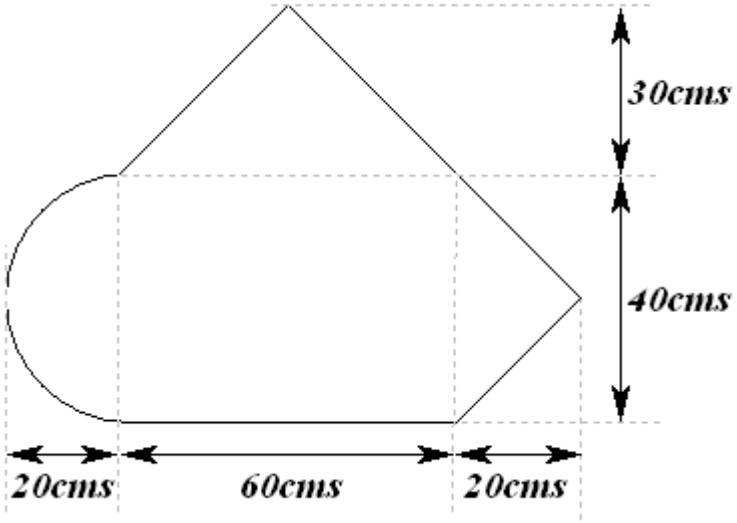
A B C D E

32) The walls and the ceiling are to be painted. How many square yards of paint will be required?

A	B	C	D	E
24	36	30	42	26

A B C D E

Mechanical Reasoning – Test 2



The sketch above shows a component which is stamped out of sheet steel. These components are stamped out of a continuous steel coil with a width of 75 cms. The stamping process requires a gap of 25mm between each component. The steel coil is supplied in lengths of 30 meters costing $200.

33) What is the approximate area of the component in square centimetres?

A	B	C	D	E
4688	4470	4562	4860	4328

A B C D E

34) What is the approximate percentage of steel wasted?

A	B	C	D	E
42%	35%	44%	37%	39%

A B C D E

35) Assuming minimal wastage, how many components can be produced from each 30 meter coil?

A	B	C	D	E
30	29	32	37	34

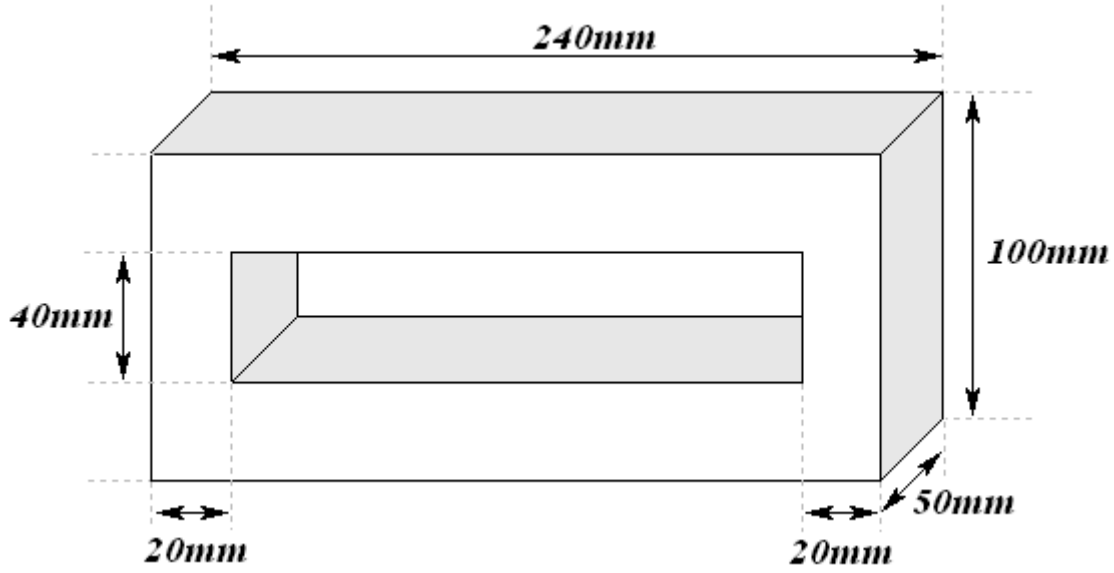
A B C D E

36) What is the approximate cost of a component if the scrap is sold at 50% of cost?

A	B	C	D	E
$4.40	$5.80	$5.66	$5.40	$6.66

A B C D E

Mechanical Reasoning – Test 2



The sketch shows a component made from titanium. The density of titanium is 4.5g per cubic cm. For shipping purposes the components are packed into individual boxes before being packed into shipping crates measuring 0.24m x 0.3m x 0.4m. Shipping crates are packed on pallets to a maximum weight of 800 Kg.

37) What is the approximate total volume of the component in cubic centimetres?

A	B	C	D	E
800	750	700	680	775

A B C D E

38) What is the approximate weight of the component?

A	B	C	D	E
3.8Kg	4.2Kg	3.6Kg	38Kg	17Kg

A B C D E

39) How many components can be fitted into a shipping crate?

A	B	C	D	E
22	26	18	24	20

A B C D E

40) How many shipping crates can be fitted onto a palette?

A	B	C	D	E
6	9	8	11	7

A B C D E

End of Mechanical Reasoning - Test 2

Mechanical Reasoning – Test 2

Answers

1)	**C**	16)	**B**	31)	**D**
2)	**D**	17)	**E**	32)	**B**
3)	**E**	18)	**E**	33)	**E**
4)	**A**	19)	**C**	34)	**C**
5)	**B**	20)	**C**	35)	**B**
6)	**B**	21)	**E**	36)	**D**
7)	**C**	22)	**C**	37)	**A**
8)	**B**	23)	**E**	38)	**C**
9)	**B**	24)	**B**	39)	**D**
10)	**B**	25)	**E**	40)	**B**
11)	**A**	26)	**A**		
12)	**E**	27)	**D**		
13)	**C**	28)	**C**		
14)	**B**	29)	**A**		
15)	**D**	30)	**B**		