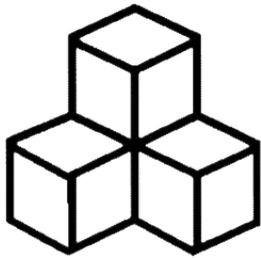


**HASTSAMPLEQuestionsforYear9/10 Entry**



If each cube measures 8 cm, what is the total surface area of the visible portion of the cube?

- A. 1,025 sq. cm.
- B. 1,152 sq. cm.
- C. 1,113 sq. cm.
- D. 1,524 sq. cm.
- E. 1,060 sq. cm.

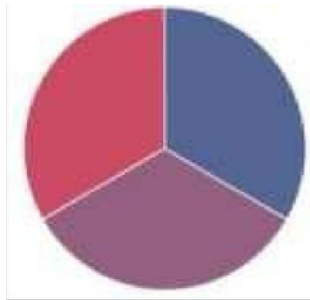
15 students can make a robotics project in 6 days, working 5 hours daily. How many days will 25 students, working 6 hours daily, complete the same project?

- A 4
- B 3
- C 10
- D 15

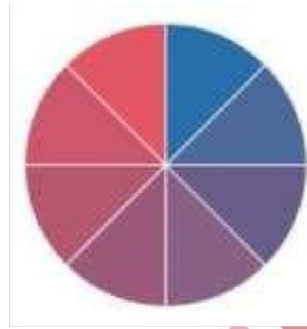
Selectivetrial.com.au

In a zoo, there are rabbits and pigeons. If heads are counted, there are 340 heads, and if legs are counted, there are 1060 legs. How many pigeons are there?

- A 120
- B 150
- C 170
- D 180



A



B

Given above are two figures A and B. Consider that the divisions are equal in both figures. What is the ratio of the angle covered by the purple area in both figures? (B/A)

- A. 0.375.
- B. 0.500.
- C. 0.450.
- D. 0.800.
- E. 0.650.



A travel agency offers six different 12-day tours. Each tour follows the same 8-day cycle of visits to eight different cities in Australia. Every tour starts from a different point in the cycle, and the cycle repeats on Day 9 of each tour.

The table below provides the schedule for the first three days of each tour. For example, tour VI visits Darwin on Day 3.

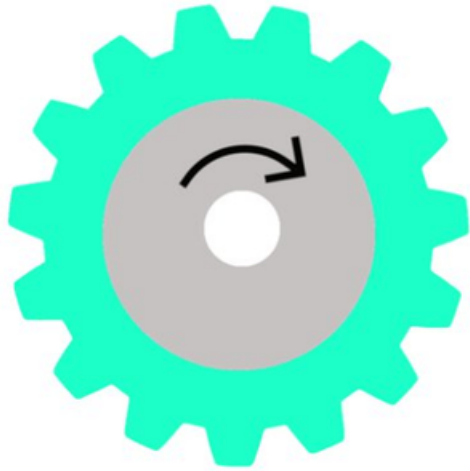
Tour	Day 1	Day 2	Day 3
I	Sydney	Melbourne	Brisbane
II	Melbourne	Brisbane	Adelaide
III	Brisbane	Adelaide	Perth
IV	Adelaide	Perth	Darwin
V	Perth	Darwin	Hobart
VI	Darwin	Hobart	Canberra

How many of the tours visit the same city more than once?

- A. none
- B. two
- C. four
- D. all six

Ethan is playing with a set of interlocking gears.

The first gear has 15 teeth and is attached to a motor. It completes one full turn in 5 seconds.



He wants to attach a second gear to complete one full turn in 8 seconds.

How many teeth must the second gear have?

- A.10
- B.18
- C.20
- D.24

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Electron affinity is defined as the energy change when a neutral atom in the gaseous state gains an electron to form a negative ion.

The diagram below illustrates general trends in electron affinity across and down the periodic table for representative elements.

(IA)	(IIA)	(IIIA)	(IVA)	(VA)	(VIA)	(VIIA)
Li	Be	B	C	N	O	F
Na	Mg	Al	Si	P	S	Cl
K	Ca	Ga	Ge	As	Se	Br
Rb	Sr	In	Sn	Sb	Te	I

[Important Exceptions:

- Chlorine has a higher electron affinity than Fluorine due to lower electron–electron repulsion.
- Elements in Group 15 (like nitrogen) have lower-than-expected values due to half-filled orbital stability.]

Which of the following lists correctly ranks the elements from highest to lowest electron affinity (most negative to least negative value)?

Highest affinity →→→ Lowest affinity

- A. F, Cl, C, Li
- B. Cl, F, C, Li
- C. C, Li, F, Cl
- D. F, C, Cl, Li

During a chemistry practical, Liam and Charlotte were testing different liquids to see which ones could complete an electric circuit.

They noticed that when they used dilute sulfuric acid, the bulb linked to the battery glowed brightly, but when they switched to a beaker of pure alcohol, the bulb remained dark despite both liquids containing hydrogen.

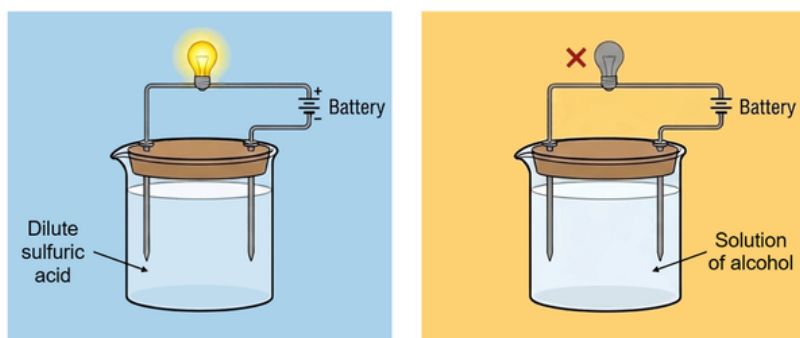


Diagram of electrical conductivity

Based on Liam and Charlotte's experiment, why does the bulb glow in the presence of an acid but not in the presence of alcohol?

- A. Acids contain metal atoms that allow electricity to flow, while alcohol is made of non-metals.
- B. Acids dissociate into free-moving ions in water, whereas alcohol molecules do not produce ions.
- C. The battery only works with sour-tasting liquids and cannot react with alcohol.
- D. Alcohol acts as an insulator because it has more hydrogen atoms than sulfuric acid.