Chapter 4

Electricity and magnetism

4.1 Simple phenomena of magnetism

01. 0625_m21_qp_22 Q: 28

Three methods to demagnetise a magnet are suggested. The magnet is in an east-west direction.

1 hitting the magnet repeatedly with a hammer

2 heating the magnet until red hot

3 withdrawing the magnet from a coil which has a direct current (d.c.) in it

Which methods demagnetise the magnet?

A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

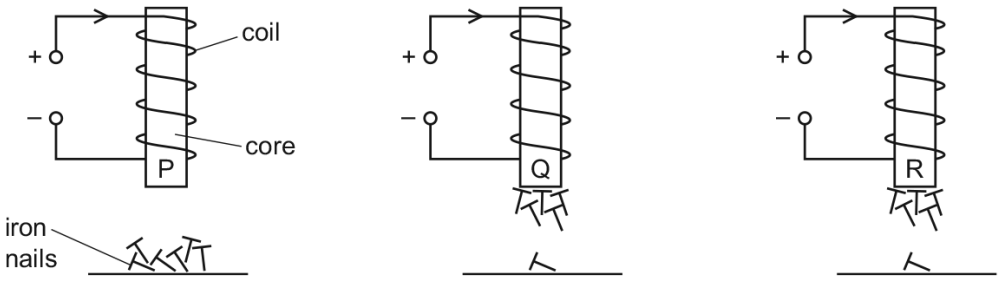
02. 0625_m21_qp_22 Q: 29

Three cores of different metals P, Q and R are placed inside identical coils of wire.

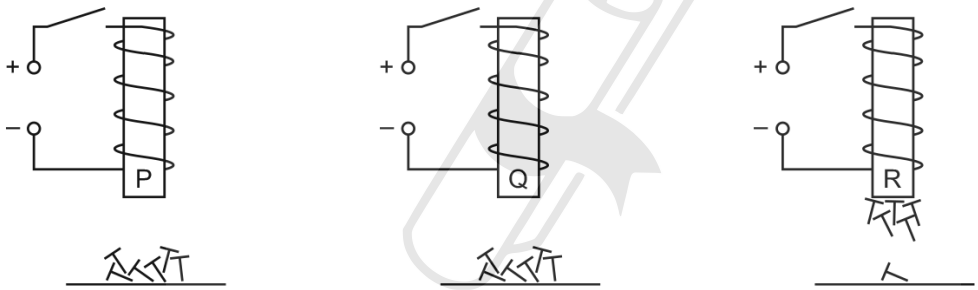
At least one of the metals is non-magnetic.

The cores are held above some iron nails.

The three diagrams show what happens when there is a current in the coils.



The three diagrams below show what happens when the current is then switched off.



Which core metals are magnetic?

A P only **B** R only **C** P and Q **D** Q and R

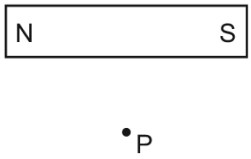
03. 0625_s21_qp_21 Q: 28

Diagram 1 shows a small compass needle with its poles marked. It is not near any magnetic materials.

Diagram 2 shows a bar magnet with its poles marked. The compass needle is placed at point P.

diagram 1

diagram 2



In which direction will the N pole of the compass needle point?

A to the left

B to the right

C down the page

D up the page

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04. 0625_s21_qp_22 Q: 27

Which method does **not** demagnetise a bar magnet?

A Heat the bar magnet and place it in the east-west direction to cool.

B Place the bar magnet in the east-west direction and hammer it.

C Place the bar magnet in a coil connected to an a.c. supply and slowly withdraw it.

D Place the bar magnet in a coil connected to a d.c. supply and slowly withdraw it.

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05. 0625_s21_qp_22 Q: 28

Three piles of small nails, P, Q and R, are placed on a bench below three electromagnets.

One set of nails is made of copper, one of soft iron and one of steel.

Diagram 1 shows the situation when the electromagnets are switched on.

Diagram 2 shows the situation when the electromagnets are then switched off.

diagram 1
the switches are **closed**

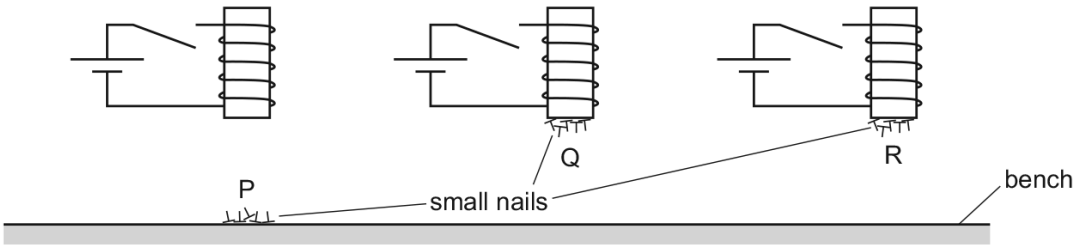
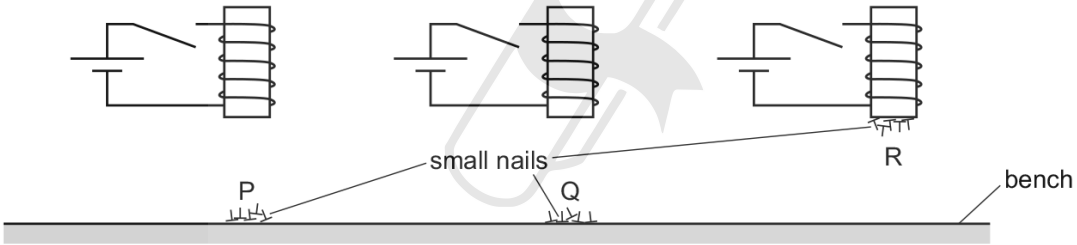


diagram 2
the switches are **open**



Which row correctly identifies the materials from which the nails are made?

	copper	soft iron	steel
A	P	Q	R
B	P	R	Q
C	Q	P	R
D	Q	R	P

06. 0625_s21_qp_22 Q: 29

A magnet is suspended by a cotton thread.

The magnet is displaced then allowed to swing freely until it comes to rest.

Why does the magnet always come to rest pointing in the same direction?

A because of the interaction between the electric field of the magnet and the electric field of the Earth

B because of the interaction between the electric field of the magnet and the magnetic field of the Earth

C because of the interaction between the magnetic field of the magnet and the gravitational field of the Earth

D because of the interaction between the magnetic field of the magnet and the magnetic field of the Earth

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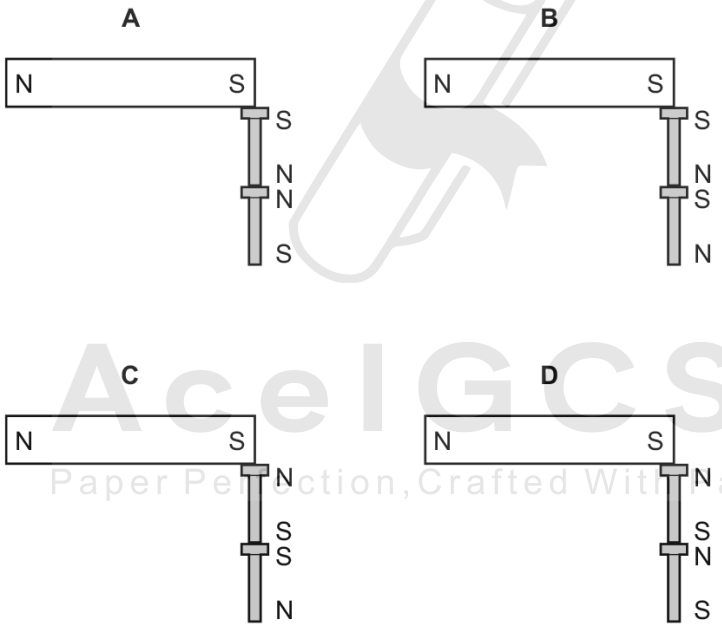
07. 0625_s21_qp_23 Q: 28

A bar magnet picks up two steel bolts.

Which diagram shows the magnetic poles induced in the bolts?



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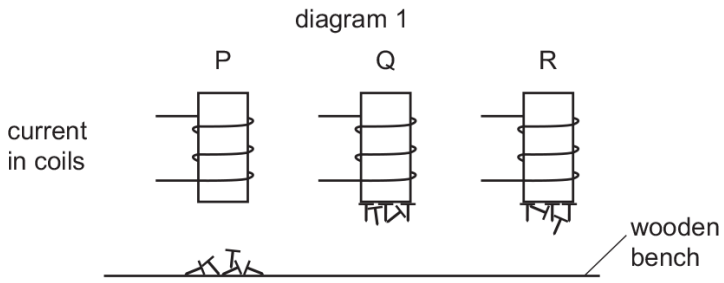
08. 0625_m20_qp_22 Q: 29

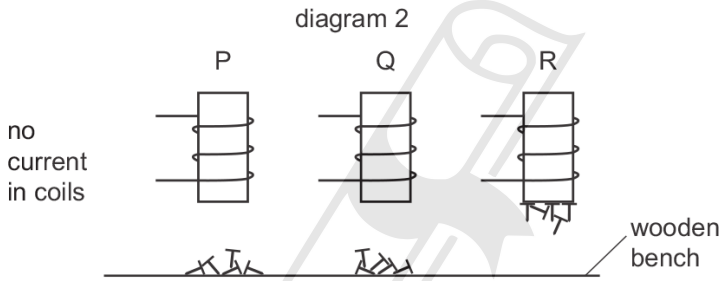
The diagrams show three different metal rods P, Q and R, inside coils of wire.

Small iron nails are placed on a wooden bench under the rods.

Diagram 1 shows the situation when there are electric currents in the wires.

Diagram 2 shows the situation when the currents are switched off.



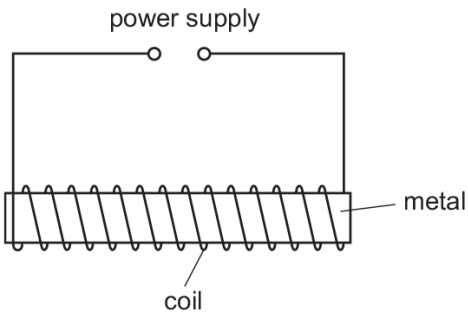


Which row correctly identifies the metal rods?

	P	Q	R
A	copper	soft iron	steel
B	soft iron	copper	steel
C	steel	soft iron	copper
D	copper	steel	soft iron

09. 0625_p20_qp_20 Q: 28

The diagram shows apparatus that can be used to make a magnet.



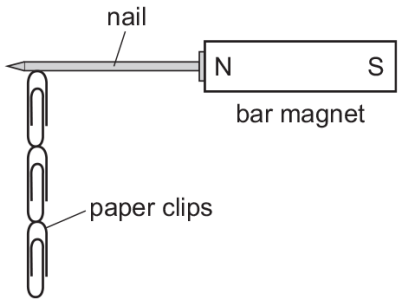
Which metal and which power supply are used to make a **permanent** magnet?

	metal	power supply
A	iron	6 V a.c.
B	iron	6 V d.c.
C	steel	6 V a.c.
D	steel	6 V d.c.

10. 0625_s20_qp_21 Q: 26

Four nails **A**, **B**, **C** and **D** are tested to find which makes the strongest permanent magnet.

One of the nails is placed against a bar magnet and the number of paper clips which the nail can support is recorded.



The bar magnet is then removed and the number of paper clips remaining attached to the nail is recorded. Each nail is tested individually.

Which nail becomes the strongest permanent magnet?

	number of paper clips attached to the nail	
	bar magnet present	bar magnet removed
A	2	0
B	2	1
C	4	3
D	5	2

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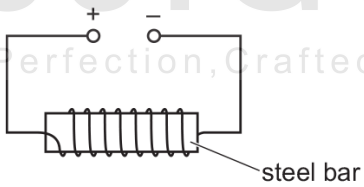
11. 0625_s20_qp_21 Q: 27

The circuit shows one method of magnetising a steel bar.



How can the circuit be altered so that it can be used to demagnetise the magnetised steel bar?

A remove the steel bar from the coil whilst the current is switched on

B replace the d.c. supply with an a.c. supply and gradually reduce the supply voltage to zero

C reverse the polarity of the d.c. supply

D reverse the polarity of the d.c. supply and gradually reduce the supply voltage to zero

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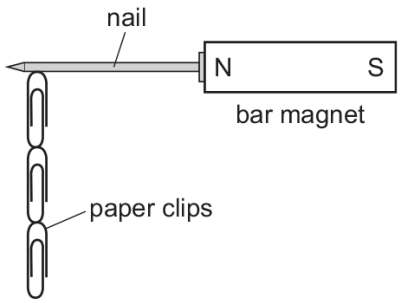
12. 0625_s20_qp_22 Q: 26

Four nails **A**, **B**, **C** and **D** are tested to find which makes the strongest permanent magnet.

One of the nails is placed against a bar magnet and the number of paper clips which the nail can support is recorded.



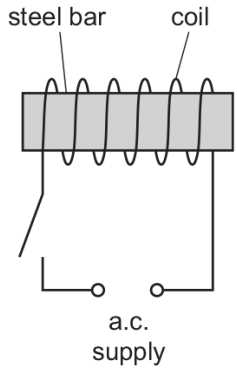
The bar magnet is then removed and the number of paper clips remaining attached to the nail is recorded. Each nail is tested individually.

Which nail becomes the strongest permanent magnet?

	number of paper clips attached to the nail	
	bar magnet present	bar magnet removed
A	2	0
B	2	1
C	4	3
D	5	2

13. 0625_s20_qp_22 Q: 27

A student wants to demagnetise a steel bar. He uses the apparatus shown. He switches on the circuit for a few seconds and then switches off. He finds that the steel bar is still magnetised.



What should he do to improve his method?

A change the supply from an alternating to a direct voltage

B use a lower alternating voltage

C remove the steel bar from the coil whilst the circuit is switched on

D use a coil that has fewer turns on it

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14. 0625_s20_qp_23 Q: 27

The diagrams show a magnetised steel rod inside a solenoid connected to a potentiometer.

In diagram 1, the potentiometer is connected to a d.c. power supply.

In diagram 2, the potentiometer is connected to an a.c. power supply.

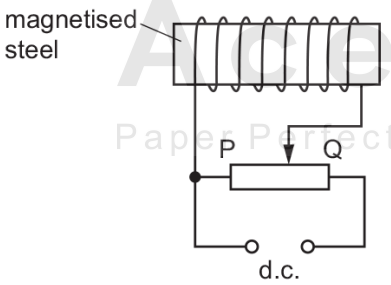

diagram 1

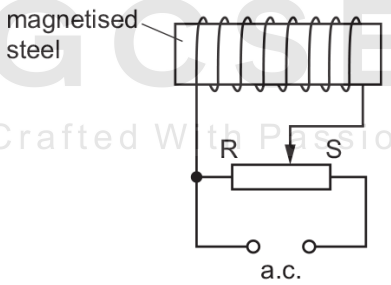

diagram 2

Which action would demagnetise the piece of steel?

A In diagram 1, move the potentiometer slide from P to Q.

B In diagram 1, move the potentiometer slide from Q to P.

C In diagram 2, move the potentiometer slide from R to S.

D In diagram 2, move the potentiometer slide from S to R.

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15. 0625_w20_qp_21 Q: 27

A piece of steel is slightly magnetised. It is hit several times with a hammer.

What effect will this have on the steel?

	the steel is parallel to a strong magnetic field	the steel is at right-angles to a weak magnetic field
A	it becomes magnetised more strongly	it becomes magnetised more strongly
B	it becomes magnetised more strongly	it loses its magnetism
C	it loses its magnetism	it becomes magnetised more strongly
D	it loses its magnetism	it loses its magnetism

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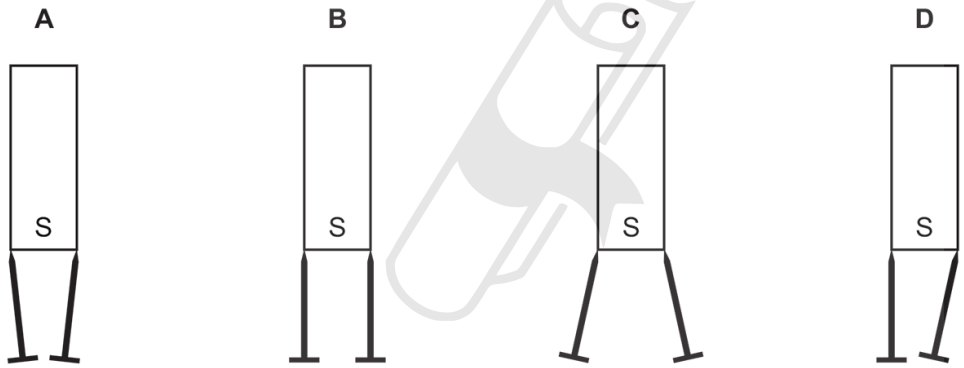
16. 0625_w20_qp_21 Q: 28

Two soft-iron pins are suspended from the S pole of a bar magnet.

Which diagram shows how the pins are deflected?



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17. 0625_w20_qp_22 Q: 27

A piece of steel is slightly magnetised. It is hit several times with a hammer.

What effect will this have on the steel?

	the steel is parallel to a strong magnetic field	the steel is at right-angles to a weak magnetic field
A	it becomes magnetised more strongly	it becomes magnetised more strongly
B	it becomes magnetised more strongly	it loses its magnetism
C	it loses its magnetism	it becomes magnetised more strongly
D	it loses its magnetism	it loses its magnetism

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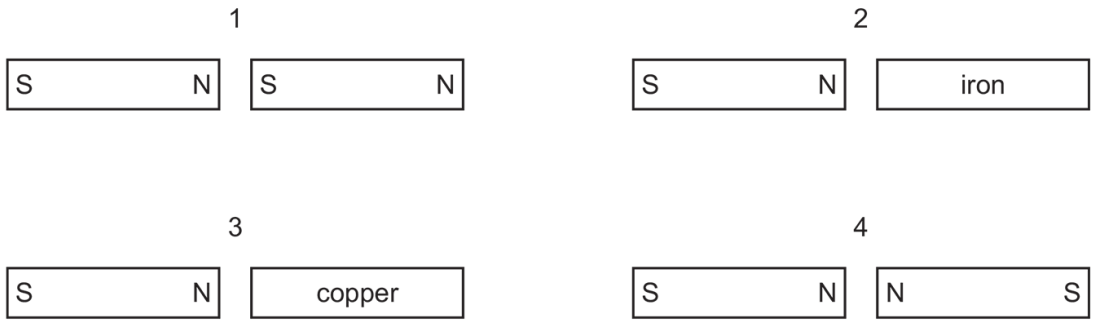
18. 0625_w20_qp_22 Q: 28

A student sets up four experiments using bar magnets and other metal objects. The N and S poles of the bar magnets are labelled N and S.



Which pairs attract each other?

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

---

19. 0625_w20_qp_23 Q: 28

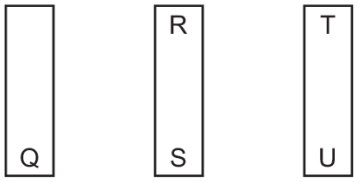
A piece of steel is slightly magnetised. It is hit several times with a hammer.

What effect will this have on the steel?

	the steel is parallel to a strong magnetic field	the steel is at right-angles to a weak magnetic field
A	it becomes magnetised more strongly	it becomes magnetised more strongly
B	it becomes magnetised more strongly	it loses its magnetism
C	it loses its magnetism	it becomes magnetised more strongly
D	it loses its magnetism	it loses its magnetism

20. 0625_m19_qp_22 Q: 28

The ends of three metal rods are tested by holding end Q of rod 1 close to the others in turn.



The results are as follows.

End Q attracts end R.
End Q attracts end S.
End Q attracts end T.
End Q repels end U.

Which of the metal rods is a magnet?

A rod 1 only

B rod 1 and rod 2

C rod 1 and rod 3

D rod 3 only

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21. 0625_s19_qp_21 Q: 26

Why is soft iron used for the core of an electromagnet?

A Soft iron easily becomes a permanent magnet.

B Soft iron is a good electrical conductor.

C Soft iron is a poor thermal conductor.

D Soft iron loses its magnetism when the current in the coil is switched off.

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22. 0625_s19_qp_22 Q: 26

A soft iron bar is a long way from any magnetic field.

How can the material of the bar be described?

A It is magnetic and strongly magnetised.

B It is magnetic and unmagnetised.

C It is non-magnetic and strongly magnetised.

D It is non-magnetic and unmagnetised.

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23. 0625_s19_qp_23 Q: 26

A metal bar is placed inside a current-carrying coil, as shown in diagram 1.

There is a small current in the coil. The bar holds a few nails, as shown in diagram 2.

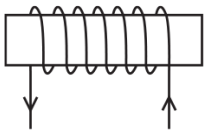

diagram 1

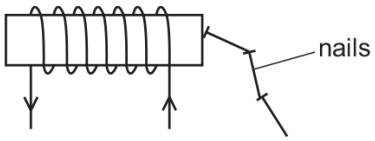

diagram 2

When there is no current in the coil, the nails drop off.

Which row is correct?

	metal from which the bar is made	effect of a larger current in the coil
A	soft iron	it makes no difference
B	soft iron	the bar holds more nails
C	steel	it makes no difference
D	steel	the bar holds more nails

---

24. 0625_w19_qp_21 Q: 26

A steel bar is placed in an East-West direction for it to be demagnetised. No other magnet is nearby.

Which method is **not** suitable?

A Hammering the bar.

B Heating the bar to a very high temperature.

C Slowly taking the bar out of a coil that carries an alternating current.

D Slowly taking the bar out of a coil that carries a direct current.

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25. 0625_m18_qp_22 Q: 29

An electromagnet is used to remove a splinter from an eye.

What material is the splinter made from?

A aluminium

B glass

C iron

D wood

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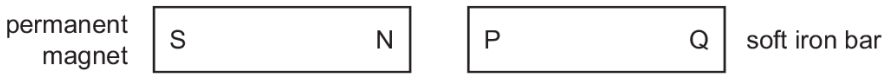
26. 0625_s18_qp_21 Q: 25

A permanent magnet is placed close to a bar of soft iron.



What are the polarities of end P and of end Q?

	end P	end Q
A	N	N
B	N	S
C	S	N
D	S	S

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27. 0625_s18_qp_21 Q: 26

A steel magnet is placed inside a coil of wire.

Which method is used to demagnetise the magnet?

A connect the coil to an a.c. power supply

B connect the coil to an a.c. power supply and slowly remove the magnet from the coil

C connect the coil to a d.c. power supply

D connect the coil to a d.c. power supply and slowly remove the magnet from the coil

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28. 0625_s18_qp_22 Q: 26

Which method is used to demagnetise a bar magnet?

A lower it into water

B heat it with a Bunsen burner

C place it in a metal box

D suspend it in a sling

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29. 0625_w18_qp_21 Q: 25

Iron is used for the core of a transformer and steel is used to make a bar magnet.

Which statement explains these uses of iron and of steel?

A Iron is a magnetic material and steel is a non-magnetic material.

B Iron is a permanent magnetic material and steel is a temporary magnetic material.

C Iron is a temporary magnetic material and steel is a permanent magnetic material.

D Iron is a non-magnetic material and steel is a magnetic material.

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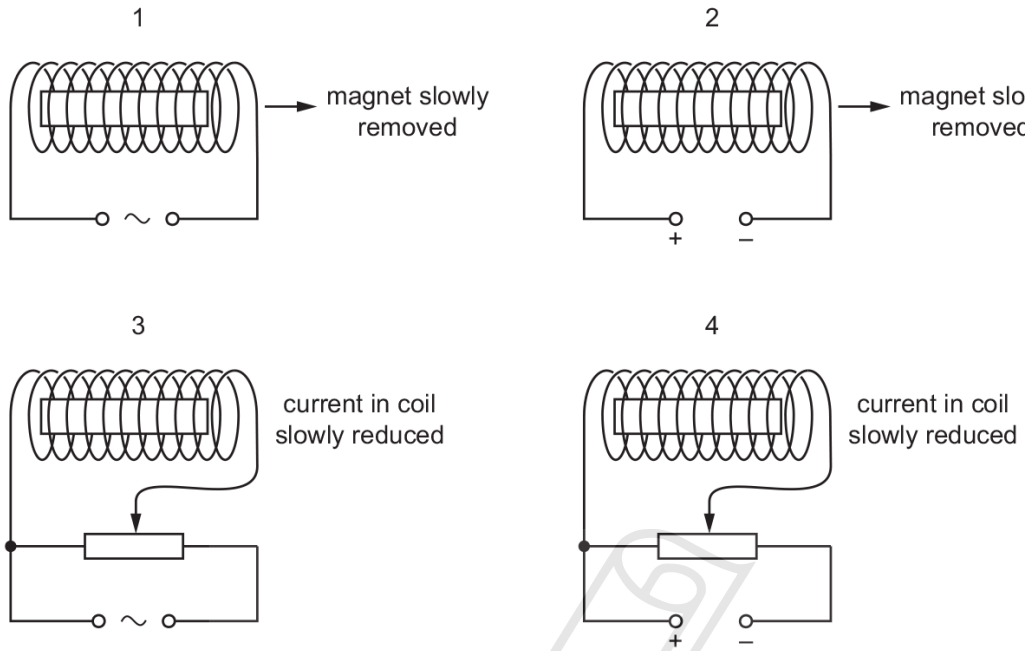
30. 0625_w18_qp_21 Q: 27

A bar magnet is placed inside a current-carrying coil. The diagram shows four different experiments.

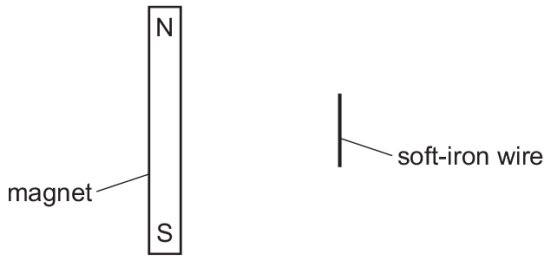


In which experiments is the magnet demagnetised?

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

31. 0625_w18_qp_22 Q: 26

The diagram shows a bar magnet at rest on a smooth horizontal surface. A length of soft-iron wire is held parallel to the magnet.



The wire is released.

What happens?

A The wire moves away from the magnet.

B The wire moves towards the magnet.

C The wire's centre stays in its present position and the wire rotates through 90° in a clockwise direction.

D The wire's centre stays in its present position and the wire rotates through 90° in an anticlockwise direction.

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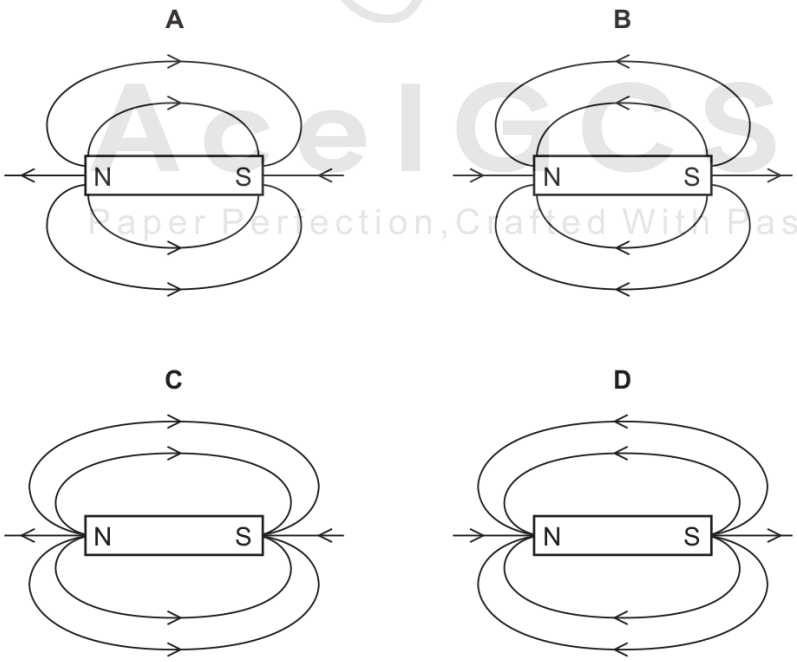
32. 0625_w18_qp_23 Q: 26

Which diagram shows the pattern and the direction of the magnetic field lines around a bar magnet?



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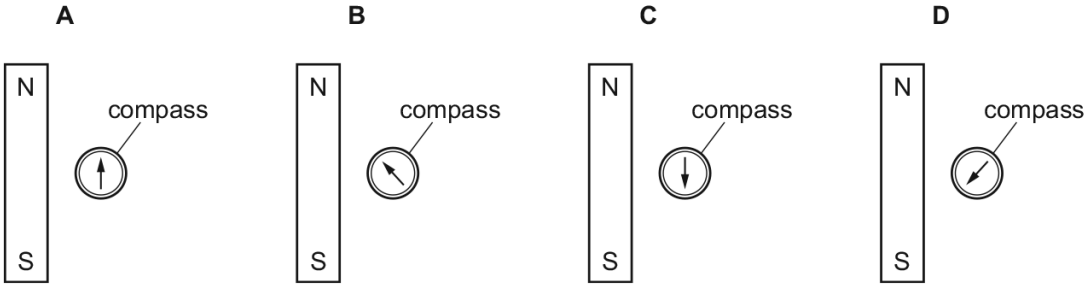
33. 0625_m17_qp_22 Q: 25

A small compass is placed close to a strong bar magnet, the same distance from each end.

Which diagram shows the direction in which the compass needle points?



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34. 0625_m17_qp_22 Q: 26

A bar magnet can be demagnetised by hammering it for a long time or by slowly removing it from a coil connected to a power supply.

Which row completes the descriptions of how these processes are carried out?

	hammering bar magnet for a long time with	slowly removing bar magnet from a coil connected to
A	magnet aligned E-W	a d.c. power supply
B	magnet aligned E-W	an a.c. power supply
C	magnet aligned N-S	a d.c. power supply
D	magnet aligned N-S	an a.c. power supply

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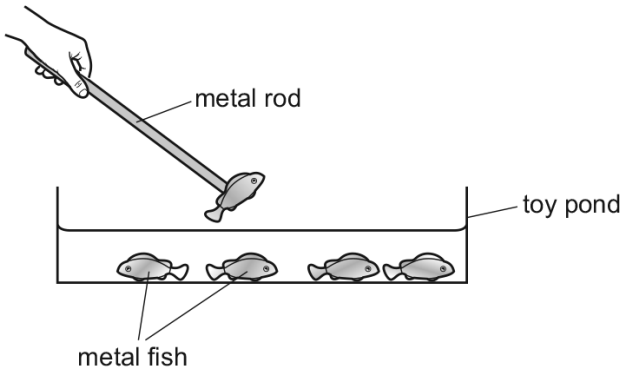
35. 0625_s17_qp_21 Q: 24

In a child's toy, metal fish are lifted out of a toy pond using a metal rod. The fish are magnetically attracted to the end of the rod. There is no magnetic force between the fish themselves.



What are possible materials from which the fish and the rod are made?

	fish	rod
A	aluminium	soft iron
B	aluminium	steel
C	soft iron	soft iron
D	soft iron	steel

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36. 0625_s17_qp_21 Q: 25

What is the most effective method of demagnetising a bar magnet?

A placing the magnet in a solenoid carrying a large alternating current and gradually decreasing the current

B placing the magnet in a solenoid carrying a large direct current and gradually decreasing the current

C placing the magnet in a solenoid that produces a magnetic field in the opposite direction to the magnet

D placing the magnet next to an identical bar magnet with its poles in the opposite direction

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37. 0625_s17_qp_22 Q: 24

A student demagnetises a magnetised steel bar.

He places the bar in a solenoid connected to a power supply. He then removes the bar from the solenoid.

Which row indicates the most effective way of demagnetising the bar?

	type of power supply	speed to remove bar
A	a.c.	fast
B	a.c.	slow
C	d.c.	fast
D	d.c.	slow

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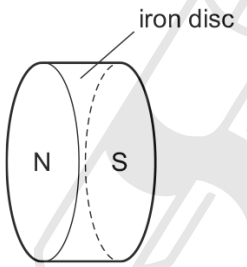
38. 0625_s17_qp_22 Q: 26

What is wrong with this labelled diagram of a permanent magnet?



A The cross-section should be rectangular.

B The length should be greater than the diameter.

C The magnet should be made of steel.

D The N-pole and the S-pole should be reversed.

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39. 0625_s17_qp_23 Q: 24

In which way are a bar magnet and an electromagnet similar?

A A bar magnet and an electromagnet are always magnetised when stored.

B A bar magnet and an electromagnet can both be used to separate magnetic and non-magnetic materials.

C A bar magnet can be made of steel and an electromagnet uses a steel core.

D The magnetic field strength of a bar magnet and of an electromagnet can both be varied.

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40. 0625_s17_qp_23 Q: 26

A steel magnet is placed in a coil and demagnetised.

Which type of current is established in the coil, and how is the current changed?

A a direct current in the coil, then reduce the current quickly to zero

B a direct current in the coil, then reduce the current slowly to zero

C an alternating current in the coil, then reduce the current quickly to zero

D an alternating current in the coil, then reduce the current slowly to zero

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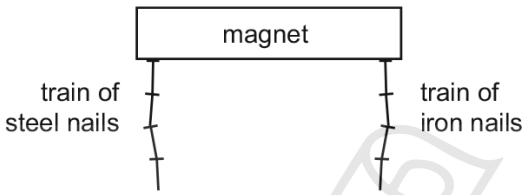
41. 0625_w17_qp_21 Q: 28

A train of steel nails and a train of iron nails hang from a strong magnet.



The trains are then carefully removed from the magnet.

What happens to the trains?

A Both trains fall apart.

B Both trains stay together.

C Only the train of iron nails falls apart.

D Only the train of steel nails falls apart.

---

42. 0625_w17_qp_21 Q: 29

How can a permanent magnet be demagnetised?

A Cool the magnet for a long time.

B Place it next to another magnet.

C Slowly pull it out of a coil connected to an a.c. supply.

D Slowly pull it out of a coil connected to a d.c. supply.

---

43. 0625_w17_qp_22 Q: 29

An old and expensive steel watch becomes magnetised.

The owner wants to use the watch again. He must demagnetise the watch.

What is the **best** method to do this?

A Insert the watch in a solenoid that carries alternating current and then slowly remove it.

B Insert the watch in a solenoid that carries direct current and then slowly remove it.

C Pass alternating current through the watch.

D Pass direct current through the watch.

---

44. 0625_w17_qp_23 Q: 29

What is the best method to demagnetise a steel rod?

A Pass the rod through a coil connected to an a.c. supply.

B Pass the rod through a coil connected to a d.c. supply.

C Place the rod next to another magnet.

D Stroke the rod with another magnet.

---

45. 0625_m16_qp_22 Q: 26

In which pair are both materials magnetic?

A aluminium and copper

B copper and iron

C iron and steel

D steel and aluminium

---

46. 0625_m16_qp_22 Q: 27

Which methods could be used to demagnetise a magnet?

method 1: place it in an east-west direction and hammer it

method 2: place it in an east-west direction and heat it until it is red hot

method 3: pull it slowly from a coil that is carrying an alternating current

method 4: put it slowly into a coil that is carrying a direct current

A methods 1, 2 and 3

B methods 2, 3 and 4

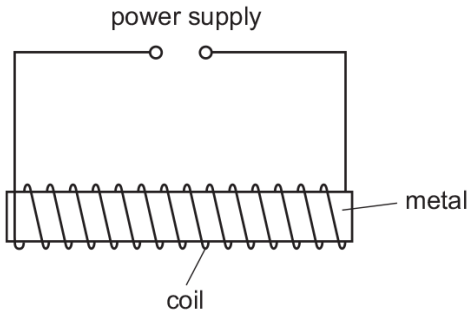
C methods 1 and 2 only

D methods 3 and 4 only

---

47. 0625_p16_qp_20 Q: 28

The diagram shows apparatus that can be used to make a magnet.



Which metal and which power supply are used to make a **permanent** magnet?

	metal	power supply
A	iron	6 V a.c.
B	iron	6 V d.c.
C	steel	6 V a.c.
D	steel	6 V d.c.

---

48. 0625_w16_qp_21 Q: 27

A student suggests three methods for demagnetising a piece of steel.

1 placing it in an east-west direction and hammering it hard

2 placing it in an east-west direction and heating it until red hot

3 removing it slowly from a coil carrying alternating current

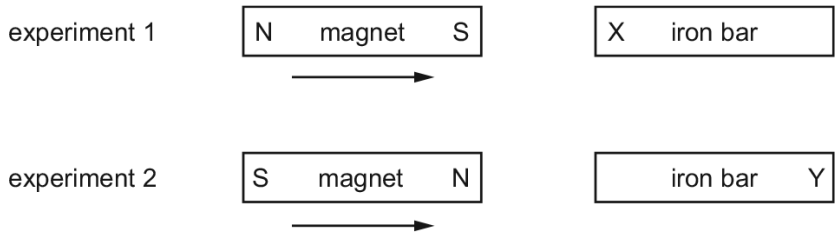
Which of the methods will demagnetise the piece of steel?

A 1 only **B** 2 only **C** 3 only **D** 1, 2 and 3

---

49. 0625_w16_qp_21 Q: 28

In two separate experiments, a magnet is brought near to an unmagnetised iron bar. This causes the bar to become magnetised.



Which magnetic pole is induced at X and at Y?

	pole induced at X	pole induced at Y
A	N	N
B	N	S
C	S	N
D	S	S

---

50. 0625_w16_qp_22 Q: 28

A student suggests three methods for demagnetising a piece of steel.

1 placing it in an east-west direction and hammering it hard

2 placing it in an east-west direction and heating it until red hot

3 removing it slowly from a coil carrying alternating current

Which of the methods will demagnetise the piece of steel?

A 1 only **B** 2 only **C** 3 only **D** 1, 2 and 3

---

51. 0625_m15_qp_12 Q: 25

Which metal is suitable to use to make a permanent magnet?

A aluminium

B brass

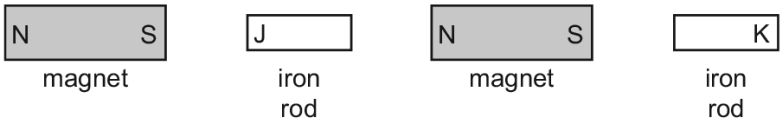
C iron

D steel

---

52. 0625_m15_qp_12 Q: 26

The diagram shows two magnets and two iron rods placed in a line.



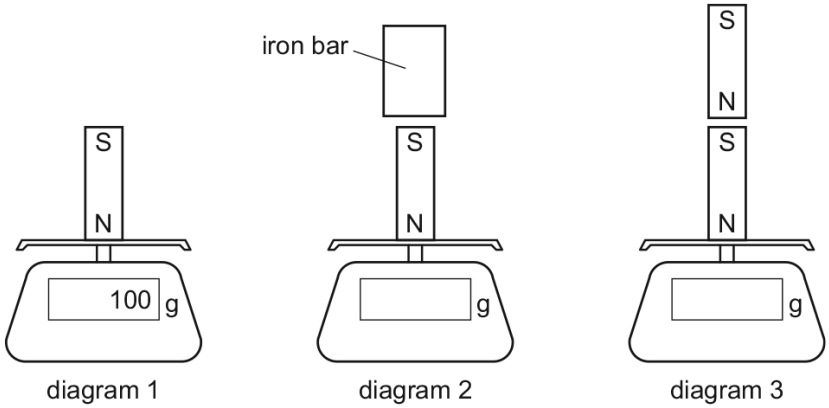
Which magnetic poles are induced at the ends J and K of the iron rods?

	pole induced at end J	pole induced at end K
A	N	N
B	N	S
C	S	N
D	S	S

53. 0625_s15_qp_11 Q: 25

A magnet is placed on a balance. The balance reading changes when an iron bar or another magnet is held close to the first magnet.

The arrangements are shown in the diagrams.

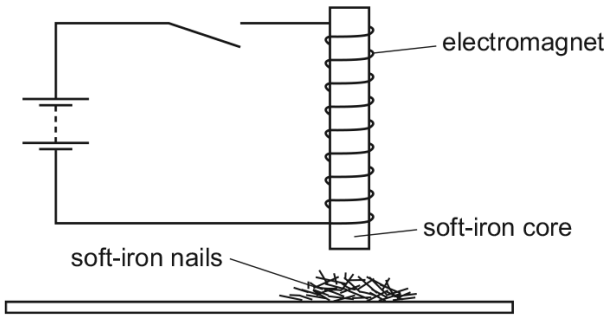


Which row gives the balance reading in diagram 2 and in diagram 3?

	balance reading in diagram 2 /g	balance reading in diagram 3 /g
A	less than 100	less than 100
B	less than 100	more than 100
C	more than 100	less than 100
D	more than 100	more than 100

54. 0625_s15_qp_11 Q: 26

An electromagnet with a soft-iron core is connected to a battery and an open switch. The soft-iron core is just above some small soft-iron nails.



The switch is now closed, left closed for a few seconds, and then opened.

What do the soft-iron nails do as the switch is closed, and what do they do when the switch is then opened?

	as switch is closed	as switch is opened
A	nails jump up	nails fall down
B	nails jump up	nails stay up
C	nails stay down	nails jump up
D	nails stay down	nails stay down

---

55. 0625_s15_qp_12 Q: 25

Which group contains only non-ferrous metals?

A aluminium, brass, iron

B brass, copper, lead

C copper, iron, steel

D copper, lead, steel

---

56. 0625_s15_qp_13 Q: 25

Which action will demagnetise a magnetised piece of steel?

A Cool it in a freezer for several hours.

B Hit it repeatedly with a hammer.

C Put it in a coil carrying a direct current (d.c.).

D Put it near an unmagnetised piece of iron.

---

57. 0625_w15_qp_11 Q: 25

Which row states whether each metal is ferrous or non-ferrous?

	ferrous	non-ferrous
A	aluminium	copper
B	copper	iron
C	iron	steel
D	steel	aluminium

---

58. 0625_w15_qp_11 Q: 26

Which procedure may be used to demagnetise a steel bar?

A cooling it in a freezer for several hours

B earthing it with a copper wire for several seconds

C removing it slowly from a coil carrying an alternating current (a.c.)

D rubbing it in one direction with a woollen cloth

---

59. 0625_w15_qp_12 Q: 25

Which statement about a permanent bar magnet is correct?

A It is made from a soft magnetic material.

B It repels a non-magnetic material.

C Its field lines cross each other where the magnetic field is strong.

D Its N-pole repels the N-pole of another magnet.

---

60. 0625_w15_qp_13 Q: 25

Which metal could be used for a permanent magnet and which metal could be used for the core of an electromagnet?

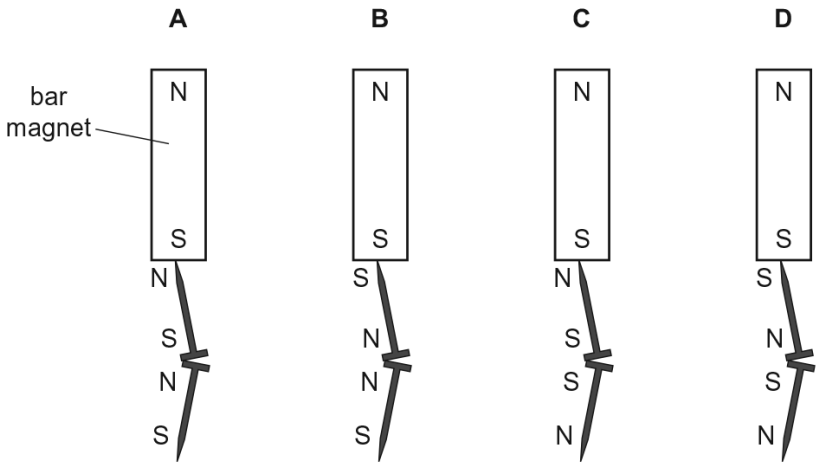
	permanent magnet	core of electromagnet
A	iron	copper
B	iron	steel
C	steel	copper
D	steel	iron

---

61. 0625_s14_qp_11 Q: 25

Two iron nails hang from a bar magnet.

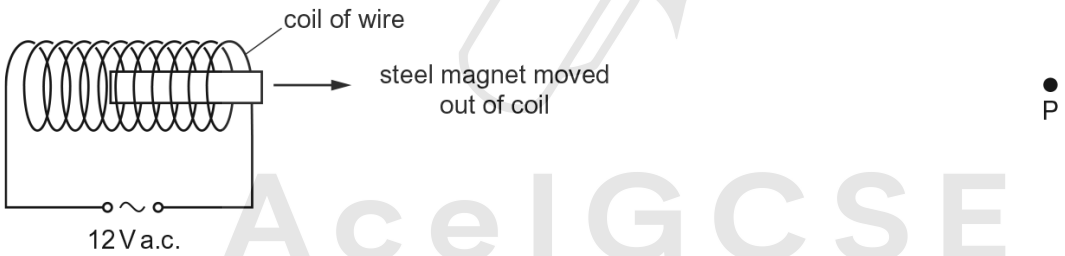
Which diagram shows the magnetic poles induced in the nails?



---

62. 0625_s14_qp_11 Q: 26

A steel magnet is placed inside a coil of wire. There is a large alternating current in the coil. The magnet is slowly moved out of the coil to position P.



How has the steel changed, if at all, when it reaches position P?

A It has become a stronger magnet.

B It has become demagnetised.

C The poles have changed ends.

D There has been no change.

---

63. 0625_s14_qp_12 Q: 26

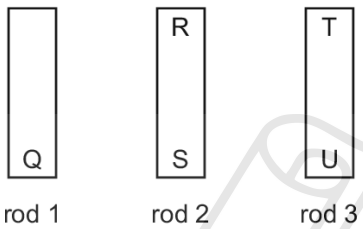
Which row correctly shows whether copper and steel are ferrous or non-ferrous?

	copper	steel
A	ferrous	ferrous
B	ferrous	non-ferrous
C	non-ferrous	ferrous
D	non-ferrous	non-ferrous

---

64. 0625_w14_qp_11 Q: 26

The ends of three metal rods are tested by holding end Q of rod 1 close to the others in turn.



The results are as follows.

End Q: attracts end R,
attracts end S,
attracts end T,
repels end U.

Which of the metal rods is a magnet?

A rod 1 only

B rod 1 and rod 2

C rod 1 and rod 3

D rod 3 only

---

65. 0625_w14_qp_11 Q: 27

A permanent magnet is made from metal and an electromagnet uses a metal core.

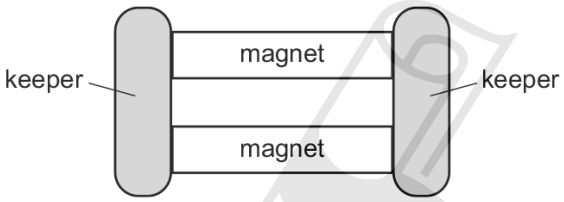
Which metal is suitable for each of these purposes?

	permanent magnet	core of electromagnet
A	iron	iron
B	iron	steel
C	steel	iron
D	steel	steel

---

66. 0625_w14_qp_13 Q: 27

The diagram shows two bar magnets, stored with metal keepers across the ends. The keepers help to keep the magnets magnetised.



The material used for the keepers becomes strongly magnetised when placed in contact with the magnets, but does not remain magnetised when taken away from the magnets.

What is a suitable metal to use for the magnets and what is a suitable metal to use for the keepers?

	metal for magnets	metal for keepers
A	iron	iron
B	iron	steel
C	steel	iron
D	steel	steel

---

67. 0625_s13_qp_11 Q: 26

Which statement about magnetism is correct?

A Aluminium is a ferrous metal.

B A steel magnet can be demagnetised by heating it.

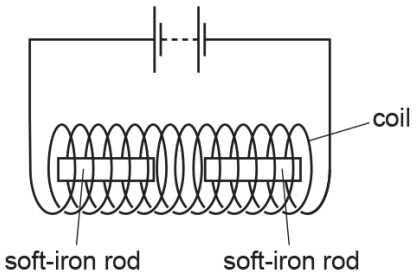
C The core of an electromagnet is usually made of steel.

D The magnetic field lines around a bar magnet are evenly spaced.

---

68. 0625_s13_qp_11 Q: 27

Two soft-iron rods are placed end to end inside a coil which is connected to a battery.



The connections from the battery to the coil are now reversed.

What happens to the soft-iron rods in each case?

	battery connections as shown	battery connections reversed
A	rods attract	rods attract
B	rods attract	rods repel
C	rods repel	rods attract
D	rods repel	rods repel

---

69. 0625_s13_qp_12 Q: 26

An electromagnet is used to separate magnetic metals from non-magnetic metals.

Why is steel **not** suitable as the core of the electromagnet?

A It forms a permanent magnet.

B It has a high density.

C It has a high thermal capacity.

D It is a good conductor of electricity.

---

70. 0625_s13_qp_12 Q: 27

An old and expensive steel watch becomes magnetised.

The owner wants to use the watch again. He must demagnetise the watch.

What is the **best** method to do this?

A Heat it until it glows red hot.

B Pass direct current though it.

C Place it in a plastic bag and put the bag in hot water for several hours.

D Place it in a solenoid that carries alternating current and then slowly remove it.

---

71. 0625_w13_qp_11 Q: 26

A hard magnetic material can be used to make a permanent magnet.

A soft magnetic material can be used to make a temporary magnet.

Which row shows whether iron and steel are hard or soft magnetic materials?

	iron	steel
A	hard	hard
B	hard	soft
C	soft	hard
D	soft	soft

---

72. 0625_w13_qp_11 Q: 27

How can a permanent magnet be demagnetised?

A cool the magnet for a long time

B hit the magnet repeatedly with a hammer

C leave the magnet in a coil which is connected to a battery

D shine bright light onto the magnet

---

73. 0625_w13_qp_13 Q: 26

In which pair are both metals ferrous?

A aluminium and copper

B aluminium and steel

C copper and iron

D iron and steel

---

74. 0625_s12_qp_11 Q: 27

Which statement describes a property of a magnet?

A It attracts ferrous materials.

B It could have only one pole (north or south).

C It points in a random direction when suspended.

D It repels non-ferrous materials.

---

75. 0625_s12_qp_11 Q: 28

Which procedure may be used to demagnetise a steel bar?

A cooling it in a freezer

B earthing it with a copper wire

C placing it in a solenoid carrying a large direct current (d.c.)

D striking it repeatedly with a hammer

---

76. 0625_s12_qp_12 Q: 27

The diagram shows a magnet being brought near to an unmagnetised iron bar. This causes the iron bar to become magnetised.

Which magnetic pole is induced at X and how is the iron bar affected?

	pole induced	effect on iron bar
A	north	attracted
B	north	repelled
C	south	attracted
D	south	repelled

---

77. 0625_s12_qp_12 Q: 28

A student wishes to make a permanent magnet. She has an iron rod and a steel rod.

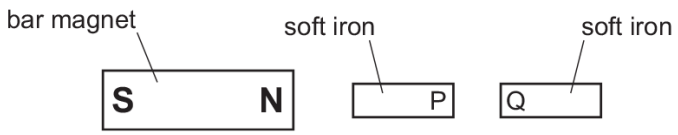
Which rod should she use to make the permanent magnet, and is this rod a hard magnetic material or a soft magnetic material?

	rod	type of magnetic material
A	iron	hard
B	iron	soft
C	steel	hard
D	steel	soft

---

78. 0625_w12_qp_11 Q: 27

Two bars of soft iron are placed near a bar magnet.



Which row states and explains the behaviour of poles P and Q of the soft iron bars?

	P and Q	reason
A	attract	P and Q are like poles
B	attract	P and Q are unlike poles
C	repel	P and Q are like poles
D	repel	P and Q are unlike poles

---

79. 0625_w12_qp_11 Q: 28

Some electrical devices require a magnet which may be switched on and off many times in a second.

Which type of magnet may be used?

A an electromagnet only

B a permanent magnet only

C either a permanent magnet or an electromagnet

D neither a permanent magnet nor an electromagnet

---

80. 0625_w12_qp_13 Q: 27

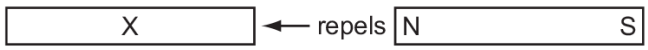
Which row shows whether iron and steel are ferrous or non-ferrous?

	iron	steel
A	ferrous	ferrous
B	ferrous	non-ferrous
C	non-ferrous	ferrous
D	non-ferrous	non-ferrous

---

81. 0625_w12_qp_13 Q: 28

The N pole of a magnet repels one end of bar X.



What happens when the **other** end of bar X is placed near to the poles of the magnet?

	other end near N pole	other end near S pole
A	attracts	attracts
B	attracts	repels
C	repels	attracts
D	repels	repels

SN	Paper	Q. No.	Answer
01	0625_m21_qp_22	28	B
02	0625_m21_qp_22	29	D
03	0625_s21_qp_21	28	B
04	0625_s21_qp_22	27	D
05	0625_s21_qp_22	28	A
06	0625_s21_qp_22	29	D
07	0625_s21_qp_23	28	D
08	0625_m20_qp_22	29	A
09	0625_p20_qp_20	28	D
10	0625_s20_qp_21	26	C
11	0625_s20_qp_21	27	B
12	0625_s20_qp_22	26	C
13	0625_s20_qp_22	27	C
14	0625_s20_qp_23	27	D
15	0625_w20_qp_21	27	B
16	0625_w20_qp_21	28	C
17	0625_w20_qp_22	27	B
18	0625_w20_qp_22	28	A
19	0625_w20_qp_23	28	B
20	0625_m19_qp_22	28	C
21	0625_s19_qp_21	26	B
22	0625_s19_qp_22	26	B
23	0625_s19_qp_23	26	B
24	0625_w19_qp_21	26	D
25	0625_m18_qp_22	29	C
26	0625_s18_qp_21	25	C
27	0625_s18_qp_21	26	B
28	0625_s18_qp_22	26	B
29	0625_w18_qp_21	25	C
30	0625_w18_qp_21	27	B
31	0625_w18_qp_22	26	B
32	0625_w18_qp_23	26	A
33	0625_m17_qp_22	25	C
34	0625_m17_qp_22	26	B
35	0625_s17_qp_21	24	D
36	0625_s17_qp_21	25	A
37	0625_s17_qp_22	24	B
38	0625_s17_qp_22	26	C
39	0625_s17_qp_23	24	B
40	0625_s17_qp_23	26	D
41	0625_w17_qp_21	28	C
42	0625_w17_qp_21	29	C
43	0625_w17_qp_22	29	A
44	0625_w17_qp_23	29	A
45	0625_m16_qp_22	26	C
46	0625_m16_qp_22	27	A
47	0625_p16_qp_20	28	D
48	0625_w16_qp_21	27	D

SN	Paper	Q. No.	Answer
49	0625_w16_qp_21	28	A
50	0625_w16_qp_22	28	D
51	0625_m15_qp_12	25	D
52	0625_m15_qp_12	26	B
53	0625_s15_qp_11	25	A
54	0625_s15_qp_11	26	A
55	0625_s15_qp_12	25	B
56	0625_s15_qp_13	25	B
57	0625_w15_qp_11	25	D
58	0625_w15_qp_11	26	C
59	0625_w15_qp_12	25	D
60	0625_w15_qp_13	25	D
61	0625_s14_qp_11	25	A
62	0625_s14_qp_11	26	B
63	0625_s14_qp_12	26	C
64	0625_w14_qp_11	26	C
65	0625_w14_qp_11	27	C
66	0625_w14_qp_13	27	C
67	0625_s13_qp_11	26	B
68	0625_s13_qp_11	27	A
69	0625_s13_qp_12	26	A
70	0625_s13_qp_12	27	D
71	0625_w13_qp_11	26	C
72	0625_w13_qp_11	27	B
73	0625_w13_qp_13	26	D
74	0625_s12_qp_11	27	A
75	0625_s12_qp_11	28	D
76	0625_s12_qp_12	27	A
77	0625_s12_qp_12	28	C
78	0625_w12_qp_11	27	B
79	0625_w12_qp_11	28	A
80	0625_w12_qp_13	27	A
81	0625_w12_qp_13	28	B