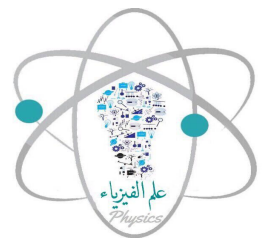




# physics



## FINAL EXAM EoT2

### 12 G T2

### 2023 - 2024

### FAHED KAMAL ALSAGHBEENI



0502444731



fahed kamal

PHYSICS

0502444731



يمكنكم الانضمام لقناتنا الجديدة على Telegram بمسح الباركود :

<https://t.me/FahedKamal>

او الضغط على الرابط:

# FINAL REVISION GRAD 12 GENERAL EoT2

2023 - 2024

Please maintain the review format ارجو المحافظة على تنسيق نموذج المراجعة

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1

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I reached two different resistors respectively with a battery, the following statements are true in describe the equivalent resistance of the circuit



وصلت مقاومتين مختلفتين على التوالي باستخدام بطارية، أي العبارات التالية صحيحة في وصف المقاومة المكافئة للبطارية

- |   |   |   |  |
|---|---|---|--|
| A | The equivalent resistance is smaller than the biggest resistance    | C | The equivalent resistance is smaller than the small resistance |
| B | The equivalent resistance is equal to the value of the resistance . | D | The equivalent resistance is greater than the large resistance |

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Three resistors( $3\Omega, 2\Omega, 6\Omega$ ) on series the equivalent resistance



ثلاث مقاومات ( $3\Omega, 2\Omega, 6\Omega$ ) على التوالي المقاومة المكافئة:

- |   |            |   |             |
|---|------------|---|-------------|
| A | $11\Omega$ | C | $36\Omega$  |
| B | $1\Omega$  | D | $0.5\Omega$ |

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Three resistors( $3\Omega, 2\Omega, 6\Omega$ ) on parallel the equivalent resistance



ثلاث مقاومات ( $3\Omega, 2\Omega, 6\Omega$ ) على التوازي المقاومة المكافئة:

- |   |            |   |             |
|---|------------|---|-------------|
| A | $11\Omega$ | C | $36\Omega$  |
| B | $1\Omega$  | D | $0.5\Omega$ |

I reached two different resistors parallel with a battery, the following statements are true in describe the equivalent resistance of the circuit



وصلت مقاومتين مختلفتين على التوازي باستخدام بطارية، أي العبارات التالية صحيحة في وصف المقاومة المكافئة للبطارية

A

The equivalent resistance is smaller than the biggest resistance

C

The equivalent resistance is smaller than the small resistance

B

The equivalent resistance is equal to the

D

The equivalent is very big

Which of the following represents a **safety** device in the Circle ?



أي مما يلي يمثل جهاز **أمان** في الدائرة؟

A

Ammeter

B

Voltmeter

C

Galvanomet

D

Breacker

Which of the following devices have a circuit that **senses a new path** of current over current?



أي من الأجهزة التالية يحتوي على دائرة تستشعر مسارًا جديدًا للتيار؟

A

Switch

B

Fuse

C

ground-fault  
interrupter

D

Circuit  
Breaker

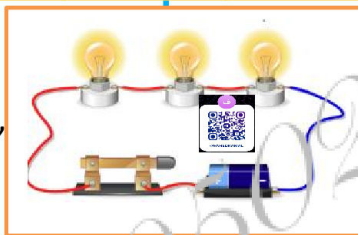


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In the circuit , if we remove a resistor from the circle, what is the change in each From the resistance, the current passing through it?



في الدائرة، إذا قمنا بإزالة مقاومة من الدائرة، ما التغير في كل من المقاومة المكافئة، التيار الذي يمر عبرها؟

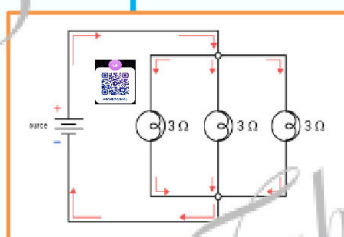
- |   |  |   |  |
|---|--|---|--|
| A | Less equivalent resistance, less total current     | C | Less equivalent resistance, increase total current     |
| B | increase equivalent resistance, less total current | D | increase equivalent resistance, increase total current |

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In the circuit , if we remove a resistor from the circle, what is the change in each From the resistance, the current passing through it?



في الدائرة، إذا قمنا بإزالة مقاومة من الدائرة، ما التغير في كل من المقاومة المكافئة، التيار الذي يمر عبرها؟

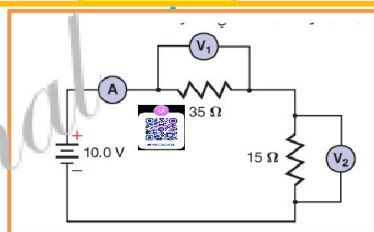
- |   |  |   |  |
|---|--|---|--|
| A | Less equivalent resistance, less total current     | C | Less equivalent resistance, increase total current     |
| B | increase equivalent resistance, less total current | D | increase equivalent resistance, increase total current |

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In the adjacent circle, compare the readings of the voltametric conductors at every resistance.

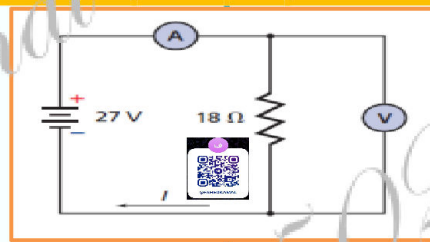


في الدائرة المجاورة، قارن قراءات الموصلات لفولتметр عند كل مقاومة

- |   |             |   |                          |
|---|-------------|---|--------------------------|
| A | $V_1 > V_2$ | C | $V_1 = V_2$              |
| B | $V_1 < V_2$ | D | $V_{SOURCE} = V_1 = V_2$ |



What is the reading of the ammeter in the circuit shown in the figure?



ما قراءة الأميتر في الدائرة الموضحة في الشكل؟

A

1.5 A

C

2.5 A

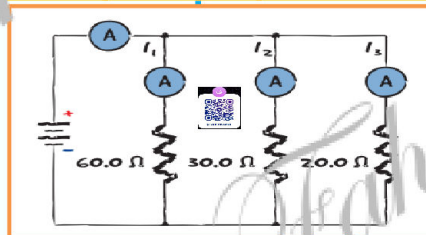
B

3.5 A

D

4.5 A

In the circle Compare the readings of the ammeter connected devices at each resistance



في الدائرة قارن بين تراءات الأميتر عند كل مقاومة

A

 $I_1 = I_2 = I_3$ 

C

 $I_1 < I_2 < I_3$ 

B

 $I_1 > I_2 > I_3$ 

D

 $I_1 = I_2 > I_3$ 

What is the scientific law on which Kirchhoff's link base s based ?

ما هو القانون العلمي الذي بنيت عليه قاعدة الوصلة لكيرشوف؟



A

The law of conservation of mass

C

The law of conservation of charge

B

The law of conservation of momentum

D

The law of conservation of energy

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What is the scientific law underlying Kerkhof's ring rule?

ما هو القانون العلمي الذي يقوم عليه قانون الحلقة لكيرشوف؟



A	The law of conservation of mass	C	The law of conservation of charge
B	The law of conservation of momentum	D	The law of conservation of energy

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If the equivalent resistance of **four** identical resistors connected in a Series is **120Ω**. How much is each resistance?

إذا كانت المقاومة المكافئة لأربع مقاومات متطابقة متصلة على التوالي هي 120 أوم كم هي كل مقاومة؟



A	0.3 Ω	C	30 Ω
B	40 Ω	D	480 Ω

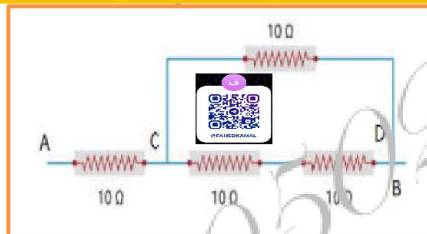
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The equivalent resistance of the **combination** shown in the figure is

المقاومة المكافئة الشكل التالي



A	19.2	B	17.6	C	16.7	D	14
---	------	---	------	---	------	---	----

If the equivalent resistance of **eight** similar resistors connected in **parallel** is **equal 3  $\Omega$**  how much each resistance?

إذا كانت المقاومة المكافئة لثمانية مقاومات متشابهة موصلة على التوازي تساوي **3 أوم** كم كل مقاومة؟



A

0.375  $\Omega$ 

C

2.67  $\Omega$ 

B

24  $\Omega$ 

D

12  $\Omega$ 

How much power is delivered to a motor with resistance of **20  $\Omega$**  from a battery of **24 volt**?

ما مقدار القدرة التي يتم توصيلها إلى محرك مقاومته **20 أوم** من بطارية جهدها **24 فولت**؟



A

29 W

C

1.2 W

B

0.9 W

D

30 W

How much power is delivered to a lamp with resistance of **40  $\Omega$**  if a current passes through the **0.8 A** lamp

ما مقدار الطاقة التي يتم توصيلها إلى مصباح مقاومته **40 أوم** إذا مر تيار مقداره **0.8 أمبير** عبر المصباح



A

29 W

C

0.02 W

B

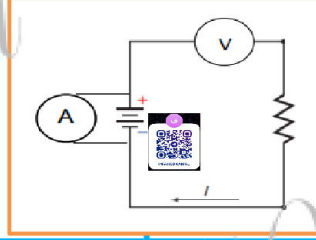
50 W

D

26 W



What is the mistake in the circuit?



ما هو الخطأ في الدائرة؟

A

The way of connecting voltmeter  
Ammeter and

C

The symbol of the battery

B

The signs of the battery terminals.

D

The direction of the conventional  
current

a short piece of metal that acts as a safety  
device by melting and stopping the current  
when too large a current passes through it.

قطعة معدنية قصيرة تعمل كجهاز أمان عن طريق إذابة  
 وإيقاف التيار عند مرور تيار كبير جدًا عبرها



A

Circuit Breaker

C

Grounding breaker

B

Fuse

D

Switch

an automatic switch that acts as a safety  
device by stopping the current if the current  
gets too large and exceeds a threshold  
value.

مفتاح تلقائي يعمل كجهاز أمان عن طريق إيقاف التيار  
 إذا أصبح التيار كبيرًا جدًا وتجاوز قيمة العتبة.



A

Circuit Breaker

C

Grounding breaker

B

Fuse

D

Switch

when a circuit with very low resistance, we can call it is

عندما تكون الدائرة ذات مقاومة منخفضة جدًا، يمكننا تسميتها كذلك



A

Open circuit

C

Short circuit

B

Load

D

Nothing

what happens to light lamps connected on the **series** if one breakdown ?

what happens to light lamps connected on the **parallel** if one breakdown ?



Three resistance connected on series ( $5\Omega, 3\Omega, 6\Omega$ ) with **24 volt**.

Calculate the strength current.



Comparison	Ammeter	Voltmeter
Function		
Connecting device		
Internal resistance		
Connecting internal resistance.		

A  $12\text{-}\Omega$ , a  $15\text{-}\Omega$ , and a  $5\text{-}\Omega$  resistor are connected in a series circuit with a  $75\text{-V}$  battery. What is the equivalent resistance of the circuit? What is the current in the circuit?



A  $9\text{-V}$  battery is in a circuit with three resistors connected in series.

- If the resistance of one of the resistors increases, how will the equivalent resistance change?
- What will happen to the current?
- Will there be any change in the battery voltage?

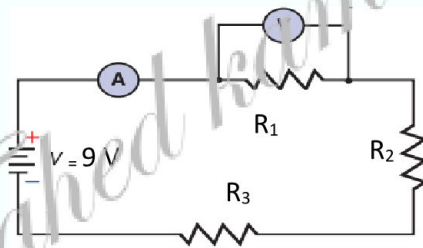




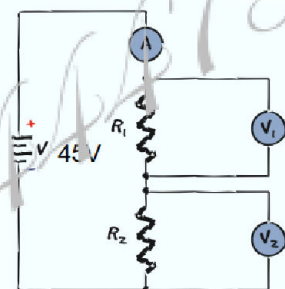
A string of lights has ten identical bulbs with equal resistances connected in series. When the string of lights is connected to a 117-V outlet, the current through the bulbs is 0.06 A. What is the resistance of each bulb?



**Voltage dividers** Suppose you have a 9 V battery, but you need a potential difference of 5 V for an electric circuit. How can you produce a potential difference of 5 V if your battery produces a potential difference of 9 V? Explain.

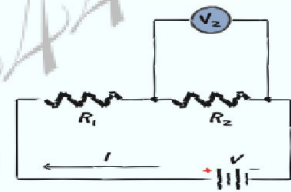


The circuit shown in Example Problem 1 is producing these symptoms: the ammeter reads 0 A,  $\Delta V_1$  reads 0 V, and  $\Delta V_2$  reads 45 V. What has happened?



Suppose the circuit shown in Example Problem 1 has these values:  $R_1 = 255 \, \Omega$ ,  $R_2 = 290 \, \Omega$ , and  $\Delta V_1 = 17 \, \text{V}$ . No other information is available.

- What is the current in the circuit?
- What is the potential difference across the battery?
- What is the total power used in the circuit, and what is the power used by each resistor?
- Does the sum of the power used in each resistor in the circuit equal the total power used in the circuit? Explain.



Explain how fuses, circuit breakers and ground-fault interrupters protect electric circuits and make them safe to operate.



1. A 9.0-V battery and two resistors,  $330\ \Omega$  and  $470\ \Omega$ , are connected as a voltage divider. What is the potential difference across the  $470\text{-}\Omega$  resistor?



The circuit in Example Problem 1 has unequal resistors. Explain why the resistor with the lower resistance will operate at a lower temperature.



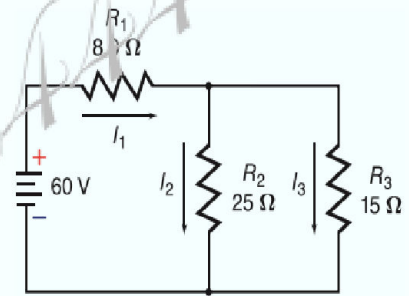
You connect three  $15.0\text{-}\Omega$  resistors in parallel across a  $30.0\text{-V}$  battery.

- What is the equivalent resistance of the parallel circuit?
- What is the current through the entire circuit?
- What is the current through each branch of the circuit?



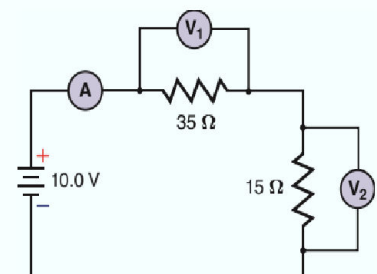


What is the current through each branch of the circuit?



Refer to **Figure 20** to answer the following questions:

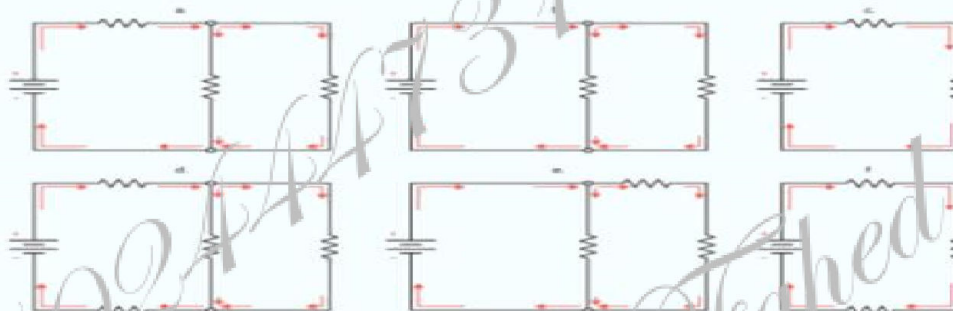
- What should the ammeter read?
- What should voltmeter 1 read?
- What should voltmeter 2 read?
- How much energy is supplied by the battery per minute?
- What is the equivalent resistance in the circuit?



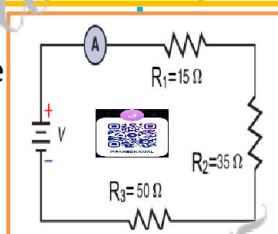
**Total Current** A parallel circuit has four branch currents: 120 mA, 250 mA, 330 mA, and 2.1 A. How much current passes through the power source?



Which of these are combination series-parallel circuits?



**Which ordering** correctly express the **potential drop** in the three branches of the circuit in the figure



أي الترتيب يعبر بشكل صحيح عن الانخفاض المحتمل في الفروع الثلاثة للدائرة في الشكل

A  $\Delta V_1 = \Delta V_2 = \Delta V_3$

C  $\Delta V_3 < \Delta V_2 < \Delta V_1$

B  $\Delta V_3 > \Delta V_2 > \Delta V_1$

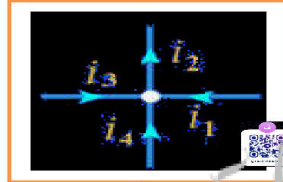
D  $\Delta V_3 > \Delta V_2 < \Delta V_1$

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From the figure below, if  $I_1 = 4A$ ,  $I_3 = 2A$ ,  $I_4 = 12A$  determine the value of  $I_2$



من الشكل أدناه، إذا كان  $I_3 = 2A$ ،  $I_1 = 4A$ ،  $I_4 = 12A$  أوجد قيمة  $I_2$

A

3 A

B

6 A

C

18 A

D

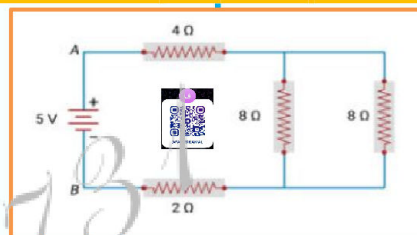
28 A

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The current supplied by the voltage source is



التيار الذي يوفره مصدر الجهد هو

A

0.25 A

B

0.5 A

C

1.5 A

D

1.25 A

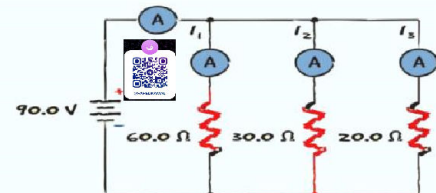
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Three parallel resistors  $20\Omega$ ,  $60\Omega$ ,  $30\Omega$  connected with battery 90 V

- calculate  $I_1$ ,  $I_2$ ,  $I_3$
- Equivalent resistance
- calculate the net current



Notes:.....

.....

.....

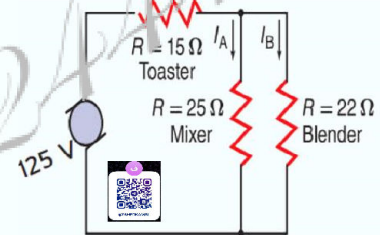
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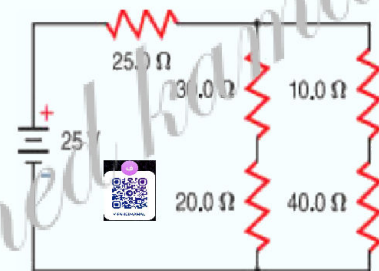
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A series-parallel circuit has three appliances on it. A blender and a stand mixer are in parallel, and a toaster is connected in series as shown in Figure Find the current through the blender.



. Consider the resistors in the circuit in Rank them from least to greatest specifically indicating any ties, using the following criteria  
a. the current through each  
b. the potential difference across each



## Part 2

## Magnetic Fields

$$F = ILB \sin(\theta)$$

$$F = qvB \sin(\theta)$$

$$e = 1.6 \times 10^{-19} \text{ C}$$

$$p = 1.6 \times 10^{-19} \text{ C}$$

**Magnet.** An object that attracts iron and some other materials.

المغناطيس: جسم يجذب الحديد وبعض المواد الأخرى

### Types of magnets:

- 1- **Permanent magnets:** They are magnets that do not lose their magnetization over time) such as natural magnets and industrial magnets

1- **المغناطيس الدائم:** وهو مغناطيس لا يفقد مغنطته بمرور الوقت .

- 2- **Temporary magnets:** They are magnets that lose its magnetization by time or by removing the impact)

2- **مغناطيسات مؤقتة:** وهي مغناط تفقد المغنطة بمرور الزمن أو بإزالة التأثير

### Magnet properties

- 1- Magnet is Polarized (The magnets have north and south poles)

المغناطيس مستقطب

- 2- Similar (like) poles repel each other, and Unlike poles attract each other .

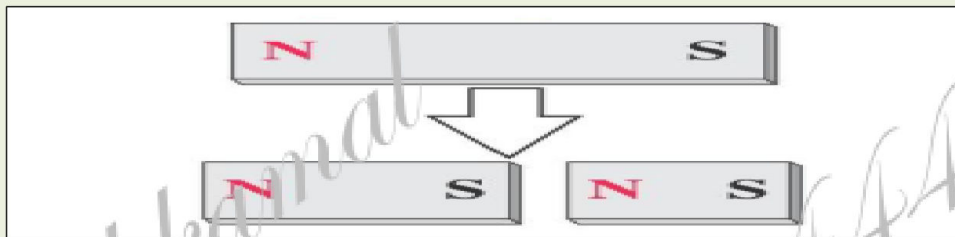
الأقطاب المتشابهة تتنافر والمختلفة تتجاذب

- 3- The north pole of the magnet is close to the south pole of the Earth magnet. and the south pole of the magnet is close to the north pole of the Earth magnet.

القطب الشمالي للمغناطيس قريب من القطب الجنوبي للأرض. وكذلك القطب الجنوبي

- 4- If the magnet is divided into two parts, it produces two magnets with a north and south pole, and so on (That is, there is no single north or south pole as in the electric charge

إذا قسم المغناطيس إلى قسمين ينتج مغناطيسان له قطب شمالي وجنوبي. أي لا يوجد قطب مفرد

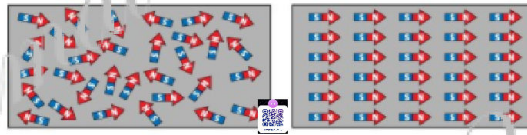


- 5- Repulsion is evidence that the object is a magnet, not attraction.

التنافر هو الدليل على أن الجسم مغناطيس وليس التجاذب

**Note:** Brass, copper, and aluminum are common metals that are not attracted to magnets

What is the correct definition of a magnetic domain?

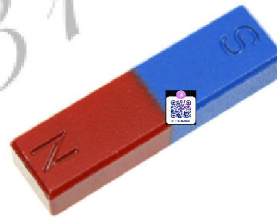


ما هو التعريف الصحيح  
للنطاقات المغناطيسية



- A** a group of atoms in a magnetic material that has aligned magnetic poles  
مجموعة من الذرات في مادة مغناطيسية لها أقطاب مغناطيسية
- B** a group of permanent magnets that have aligned magnetic poles  
مجموعة من المغناطيسات الدائمة التي لها أقطاب مغناطيسية محاذية
- C** a group of atoms in a magnetic material that has random magnetic poles  
مجموعة من الذرات في مادة مغناطيسية لها أقطاب مغناطيسية عشوائية
- D** a group of permanent magnets that have random magnetic pole  
مجموعة من المغناطيسات الدائمة ذات قطب مغناطيسي عشوائي

**What** is the statement that describes what happens if you cut this magnet in half?



ما هو الوصف الصحيح لقصص مغناطيس  
نصفين



- A** It becomes two magnets.  
يتشكل مغناطيسين
- B** It becomes polarized.  
يصبح مستقطب
- C** It becomes two monopoles.  
يكون له قطبان متشابهان
- D** It loses its magnetism.  
تقل المغنطة

**What** is the best description of the steel nails in this image?



ما هو أفضل وصف للمسامير في الصورة؟



- A** They are permanent magnets which means they have a permanent magnetic field.  
هي مغناط دائمة مما يعني ان لها مجال مغناطيسي دائم
- B** They are permanent magnets, which is why they are able to stick to each other.  
هي مغناط دامة مما يفسر التصاقها ببعض
- C** They are ferromagnetic, so they become magnetized in the presence of a magnetic field.  
هي مواد قابلة للمغنطة لذلك تصبح مغناطيس فقط عند وقوعها في مجال مغناطيسي
- D** They are ferromagnetic which means that they are permanent magnets.  
هي مواد قابلة للمغنطة مما يعني انها مغناطيس دائم



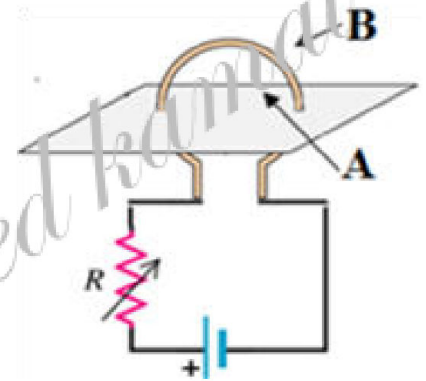
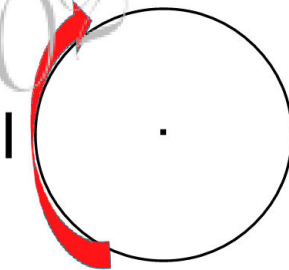
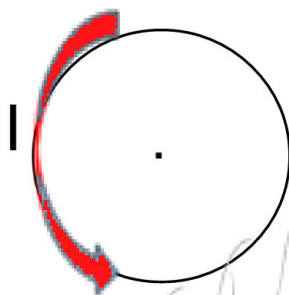
The number of magnetic field lines that penetrate the surface.

عدد خطوط المجال المغناطيسي التي تخترق السطح

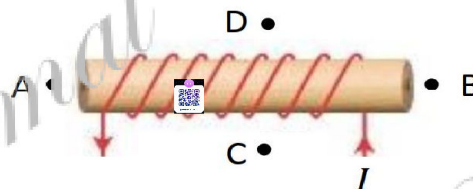


<b>A</b>	Magnetic flow (Flux)	<b>B</b>	Magnetic Field	<b>C</b>	Magnetization	<b>D</b>	Magnetism
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Draw the magnetic field lines around a loop of current-carrying wire and apply the right-hand rule to indicate the direction



Which point represent the north pole of the solenoid shown in the figure?



النقطة التي تمثل القطب الشمالي للملف اللولبي الموضح في الشكل هي

<b>A</b>	Point A	<b>B</b>	Point B	<b>C</b>	Point C	<b>D</b>	Point D
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Note : .....

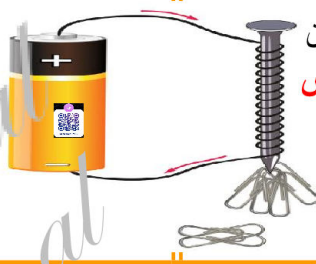
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Looping a wire connected to a battery around a nail will form an electromagnet.

Where is the electromagnet's north pole shown on the image to the right?



سيؤدي لف تلك متصل بالبطارية حول مسمار إلى تكوين مغناطيس كهربائي. أن يظهر القطب الشمالي للمغناطيس الكهربائي في الصورة على اليمين؟



- |   |                                  |                                  |
|---|----------------------------------|----------------------------------|
| A | at the top of the nail           | في الجزء العلوي من المسمار       |
| B | at the bottom of the nail        | في الجزء السفلي من المسمار       |
| C | at the center of the nail        | في مركز المسمار                  |
| D | along the right side of the nail | على طول الجانب الأيمن من المسمار |

Look at the experiment in this image

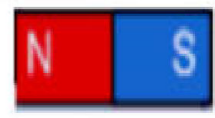
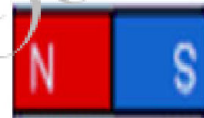


انظر إلى التجربة في هذه الصورة

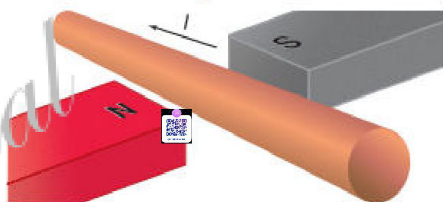


- |   |   |   |
|---|---|---|
| A | The electromagnet's S-pole is to the right of the image.                                    | يقع القطب S للمغناطيس الكهربائي على يمين الصورة           |
| B | The number of attracted paper clips is inversely proportional to the size of the iron core. | عدد مشابك الورق المنجذبة يتناسب عكسياً إلى حجم قلب الحديد |
| C | The number of attracted paper clips is directly proportional to the number of coils.        | عدد مشابك الورق المنجذبة يتناسب طردياً مع عدد اللفات      |
| D | The number of attracted paper clips is inversely proportional to the number of coils.       | عدد مشابك الورق المنجذبة يتناسب عكسياً مع عدد اللفات      |

Draw the resulting magnetic field from Draw the resulting magnetic field from the following



Choose the correct **direction of the magnetic force**.

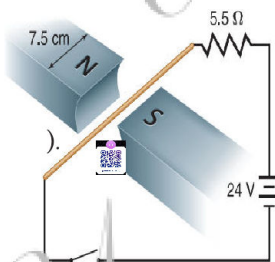


اتجاه القوة المؤثرة بالسلك



- A** left      **B** right      **C** toward you      **D** Down

A copper wire of insignificant resistance is placed in the center of an air gap between two magnetic poles. The field is confined to the Determine the **force** on the wire (switch is open). , (switch is closed battery is reversed. the wire has two  $5.5 \Omega$  resistors in series.



تم وضع سلك نحاسي مهمل المقاومة في مركز الحيز بين قطبين مغناطيسيين كما يظهر في يقتصر وجود المجال على الحيز بين القطبين ويبلغ مقداره  $1.9 \text{ T}$  حدد القوة المؤثرة على السلك (مقدارًا واتجاهًا) في كل من الحالات الآتية:



- a. عندما كان المفتاح مفتوحًا.  
b. عند إغلاق المفتاح.  
c. عند إغلاق المفتاح وعكس البطارية.  
d. عند إغلاق المفتاح ووجود مقاومين مقدار كل مقاومة  $5.5 \Omega$  تتصلان بالسلك معًا على التوالي.

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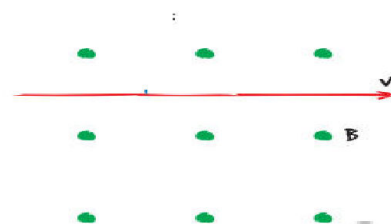
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A beam of electrons travels at  $3.0 \times 10^6 \text{ m/s}$  through a uniform magnetic field of  $4.0 \times 10^{-2} \text{ T}$  at right angles to the field. How strong is the force acting on each electron?



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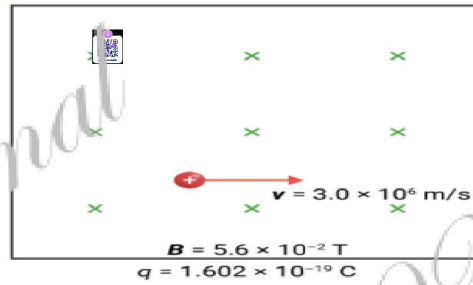
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What is the correct magnitude and direction of the magnetic force acting on a charge.



ما هي قيمة واتجاه القوة المغناطيسية المؤثرة في الشحنة كما في الصورة

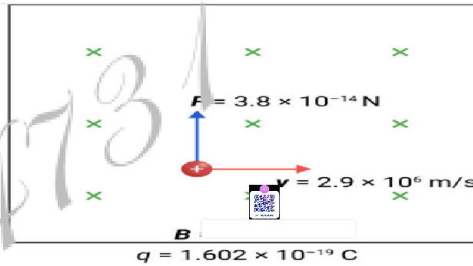
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This is an image of a proton traveling in a magnetic field, what is magnetic field strength?



بروتون يتحرك في مجال مغناطيسي كما هو في الشكل ، احسب قيمة المجال المغناطيسي؟

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# GOOD LUCK



يمكنكم الإنضمام لقناتنا الجديدة على Telegram بمسح الباركود :

او الضغط على الرابط: <https://t.me/FahedKamal>