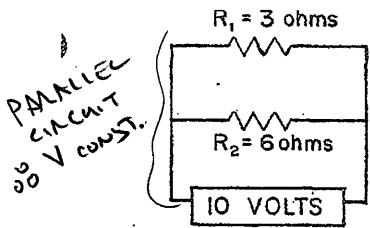


ELECTRICITY REVIEW PACKET

WDS Electricity Electricity UNIT REVIEW PACKET

value

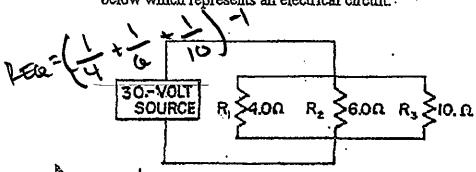
- the diagram below.



The voltage drop across R_1 is

- 6 V
- 9 V
- 3 V
- 10 V

- Base your answer to the following question on the diagram below which represents an electrical circuit.



The equivalent resistance of R_1 , R_2 , and R_3 is approximately

- 10 ohm
- 2 ohm
- 20 ohm
- 7 ohm

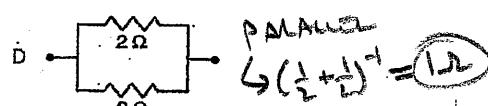
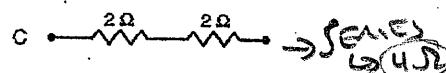
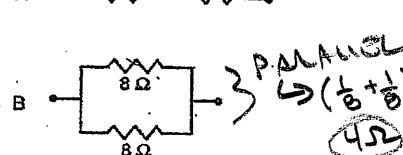
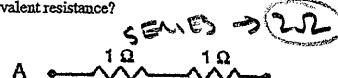
- If the potential drop across an operating 300-watt floodlight is 120 volts, what is the current through the floodlight?

- 0.40 A
- 2.5 A
- 7.5 A
- 4.5 A

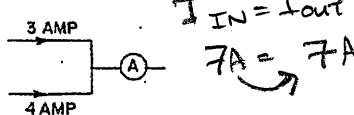
$$P = IV$$

$$I = \frac{P}{V} = \frac{300}{120} = 2.5 \text{ A}$$

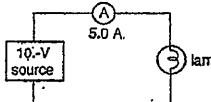
- Which two of the resistor arrangements shown below have equivalent resistance?



- The diagram below represents a segment of a circuit. What is the current in ammeter A?



- A lamp and an ammeter are connected to a source as shown.



What is the electrical energy expended in the lamp in 3.0 seconds?

- 50 J
- 150 J
- 50 W
- 150 W

WATU MEASURE POWER

$$W = IVt = (10)(5)(3)$$

**ENERGY
MEASURED
V**

$$\text{Power} = \frac{VI}{t}$$

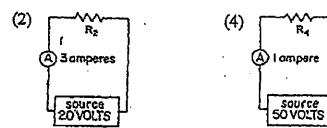
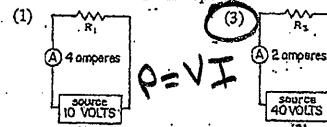
$$W = Pt$$

$$= (1500) \frac{3600}{3600} \text{ J}$$

- One watt is equivalent to one

- Nm
- N/m
- J/s
- J/s

- In which of the circuits represented below will the resistor consume the most electrical power?



- To increase the brightness of a desk lamp, a student replaces a 60-watt light bulb with a 100-watt bulb. Compared to the 60-watt bulb, the 100-watt bulb has
- less resistance and draws more current
 - less resistance and draws less current
 - more resistance and draws more current
 - more resistance and draws less current

- The heating element on an electric stove dissipates 4.0 \times 10³ watts of power when connected to a 120-volt source. What is the electrical resistance of this heating element?

- .028 ohm
- .60 ohm
- 3.3 ohm
- 36 ohm

11.

$$P = \frac{V^2}{R}$$

$$R = \frac{V^2}{P}$$

$$= \frac{(120)^2}{400} = 36 \Omega$$

The circuit represented in the diagram above is a series circuit. The electrical energy expended in resistor R in 2.0 seconds is

- 20 J
- 40 J
- 80 J
- 120 J

- An electron-volt is a unit of

- potential difference
- charge
- current
- energy

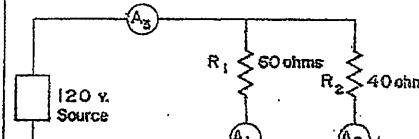
- What is the total electrical energy used by a 1500-watt hair dryer operating for 6.0 minutes?

- 4.2 J
- 250 J
- 9.0 \times 10³ J**
- 5.4 \times 10⁵ J

- How much work is done in moving 6 electrons through a potential difference of 2.0 volts?

- 6.0 eV
- 2.0 eV
- 3.0 eV**
- 12 eV

Base your answers to questions 15 through 19 on the circuit diagram below.



- The effective resistance of the circuit is

- 600 ohm
- 100 ohm
- 24 ohm
- 20 ohm

- The reading of ammeter A₁ is

- 5 A
- 2 A
- 3 A
- 8 A

- Compared to the current in ammeter A₃, the sum of the currents in A₁ and A₂ is

- greater
- less
- the same

- If a third resistor is connected in parallel to the circuit, the total resistance will

- decrease
- increase
- remain the same

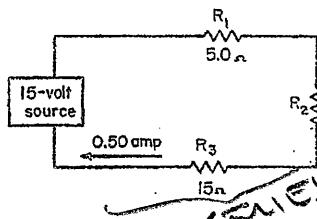
- If a third resistor were connected in parallel to this circuit, the potential difference across the third resistor would be

- 20 V
- 40 V
- 50 V
- 120 V

$$V_T = V_1 = V_2 = V_3 = \dots$$

	V	I	R	P
1	2.5	.5	5	
2	5	.5	10Ω	
3	7.5	.5	15Ω	
4	15	.5	30Ω	

Base your answers to questions 20 through 23 on the diagram below which shows 3 resistors connected to a 15-volt source.



20. (1) 10Ω
(2) 20Ω
(3) 30Ω
(4) 40Ω

21. The potential difference across R_2 is

- (1) 2.5V
(2) 5.0V
(3) 7.5V
(4) 10V

22. The total power developed in the circuit is

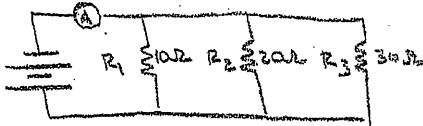
- (1) 2.5W
(2) 5.0W
(3) 7.5W
(4) 10W

23. If resistor R_3 is removed and replaced by a resistor of lower value, the resistance of the circuit will

- (1) decrease
(2) increase

$$P_T = P_1 + P_2 + P_3 + \dots$$

24.



IF THE AMMETER MEASURES 1.0A OF CURRENT, FIND THE FOLLOWING

(A) TOTAL RESISTANCE = 5.45Ω

(B) TOTAL VOLTAGE →

$$V_T = I_T R_T$$

$$54.5V$$

CONTINUED ON BACK

Page 3

	V	I	R	P
1			10	
2			20	
3			30	
4		10A	5.45V	

25. FIND THE RESISTANCE

FOR A 10M COPPER WIRE w/ A RADIUS OF 0.05M. (HINT: FIND AREA)

$$\hookrightarrow R = \frac{\rho L}{A} \rightarrow A = \pi r^2$$

$$R = \frac{(1.72 \times 10^{-8} \Omega \cdot m)(10m)}{\pi (0.05m)^2} = 2.19 \times 10^5 \Omega$$

26. CALCULATE THE AMOUNT

OF ENERGY USED BY A 20Ω RESISTOR THAT ALLOWS 0.5A OF CURRENT TO MOVE THROUGH IT IN 20 SECONDS.

$$W = I^2 R t$$

$$= (0.5A)^2 (20\Omega) 20s$$

$$W = 100J$$

27. CALCULATE THE

AMOUNT OF CHARGE MOVING THROUGH A 10Ω RESISTOR THAT ALLOWS 2A OF CURRENT TO MOVE THROUGH IN 30S.

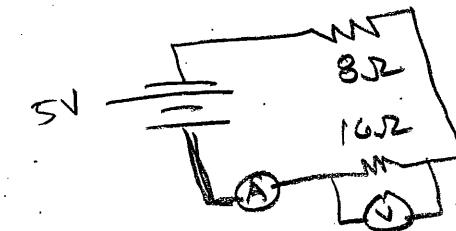
$$I = \frac{q}{t} \Rightarrow q = I t$$

$$= (2A)(30s)$$

$$q = 60C$$

28) DRAW A SERIES CIRCUIT w/ A

8Ω + 16Ω RESISTOR CONNECTED TO A 5V BATTERY. INCLUDE A AMMETER TO MEASURE TOTAL CURRENT AND VOLTMETER TO MEASURE VOLTAGE FOR 16Ω



29) WHAT ARE THE FACTORS AND RELATIONSHIPS FOR THE RESISTANCE OF A CONDUCTING WIRE

• ↑ LENGTH, ↑ R

• ↑ AREA, ↓ R

• ↑ RESISTIVITY, ↑ R

• ↑ TEMPERATURE, ↑ R

30) FIND THE AREA OF A TUNGSTEN WIRE THAT HAS A RESISTANCE OF 2Ω AND A LENGTH OF 500M.

$$R = \frac{\rho L}{A}$$

$$\hookrightarrow A = \frac{\rho L}{R} = \frac{(5.60 \times 10^{-8} \Omega \cdot m)(500m)}{2\Omega}$$

$$A = 1.4 \times 10^{-5} m^2$$