

Welcome to the Coconino Amateur Radio Club (CARC) Monthly Newsletter. CARC is a non-profit club devoted to providing communication services to local volunteer agencies and events. Meetings are held the second Thursday of each month at the East side Sizzlers Restaurant Highway 66 at Fanning Dr. Flagstaff, at 7:00PM. All persons interested in amateur radio, whether licensed or not, are welcome to attend.

Coconino SkyWarn meets 1900 every Monday evening on the 146.98 repeater and at 1930 on the Navajo Mountain CACTUS repeater and 146.480 simplex.

Coconino ARES meets 1900 every Wednesday evening on the 146.98 repeater and at 1930 on the Navajo Mountain CACTUS repeater and 146.480.

Officers:

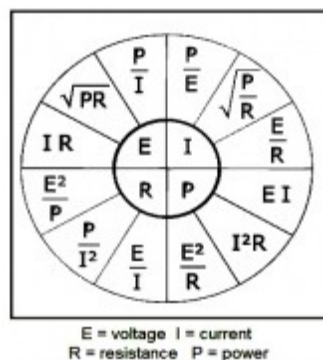
President: Sandy Meadowcroft KF4JHC

Vice-President: Tom Shehan W7TGS

Secretary: Erv Perelstein, KE7QFI

Treasurer: Pat Traber, KE7QFG

PIO: Janice Enloe, KI6WCK



Calendar of Events for 2016:

Coconino Amateur Radio Club *TENTATIVE* 2016 Schedule:

January

16 Amateur Radio Examinations at Northern Country Health Care

February

?? Special license exam for Flagstaff High School students

March

9 Northern Preparatory Academy high altitude balloon launch
 March 9 is launch date with March 10th and 11th backup dates

April

16 Amateur Radio Examinations at Northern Country Health Care

?? PFAC Wildlands Fire Exercise
May
20-22 Overland Expo: Demonstrations and Amateur Radio License Examinations

June
4 Sacred Mountain Prayer Run (KF4JHC)
25-26 Field Day (KG7OH & Team)

July
4 Munds Park Parade
17 Snow Bowl Hill Climb
23 Amateur Radio License Exams at
Williams Hamfest/Arizona State Convention
August
6 Toys for Tots/Fat Tire Bicycle Ride
13 Big Brothers/Big Sisters Run for the Magic
28 Possible Arizona Trail Marathon at North Rim
**Northland Preparatory Academy to ISS amateur radio contact during
Aug-Sep-Oct

September
5 Williams 10K Labor Day Run
24-25 Flagstaff to Grand Canyon 100 Mile Run (KQ1S)

October
8 Soulstice Mountain Trail Run (KF4RKS)
15 Amateur Radio License Exams at North County Health Care
?? Northland Preparatory Academy solar observing
November
?? Arizona Division of Emergency Management Exercise
?? Girls on the Run (KF4JHC)
December
3 SkyWarn Recognition Day at NWS Belmont (UTC date) (KD8RQV)
TBA Christmas party

Thank you and Help Wanted:

Thank you to all who have run the Monday and Wednesday night nets:
Flagstaff: Tom W7TGS, Erv KE7QFI, Mike KD8RQV, Robert KF4RKS
Page: Lee KF7YRS and Vince WB7UWW

If anyone one would like to help with the nets, please let Tom know. It is good practice for radio skills and the script is written for you to use.

Licensing Exams for 2015-2016:

January 16, 2016 North Country Health Care on 4th Street

April 16, 2016

North Country Health Care on 4th Street

Remember to bring your HAM license and a copy (if you are upgrading your license), a government issued picture ID, a black ink pen, calculator with memory erased and fifteen dollars (exact change is appreciated).

<http://wireless2.fcc.gov/UlsApp/UlsSearch/searchLicense.jsp>

Arizona Newsletter: <http://www.arrl.org>

Tutorials: <http://www.arrl.org/tutorials>

http://www.arrl.org/exam_sessions/flagstaff-az-86004-1221-2

Next Business Meeting:

Our next business meeting will be January 14, 2016 at the East side Sizzlers at the corner of Highway 66 and Fanning. Dinner @1800 and meeting starts @1900.

Minutes of the Coconino Amateur Radio Club

11/12/2015

Meeting Started: 19:00

Guests: 1

Before the meeting started CARC member Phyllis Thompson addressed the group to say goodbye as she is moving to Oregon. The group thanked her for her support and wished her well.

Secretary's Report: Since the minutes of the Aug meeting were published in the newsletter there was no need to read them. Minutes were approved unanimously.

Treasurer's Report: Pat Traber, our club treasurer, gave the treasurer's report. The closing bank balance was \$2,955.48. Membership is 59 members, consisting of 55 paid members and 4 lifetime members, probably the highest membership in many years. Bill Smith moved and Janice Enloe seconded a motion to accept the Treasurer's Report as written. Unanimously accepted.

President's Report: After Introductions, (we welcomed one guest to our meeting) Sandy Meadowcroft reminded everyone that the December meeting would be the Christmas party held at the Meadowcroft house on December 6th at 14:00.

Vice President's Report: Tom Shehan reported that due to different travel obligations he would be away most of the month of December and asked for other volunteers to help with ARES net.

In new business:

Discussion was held on the possibility of the club getting a Square (credit card reader) to process sales of shirts, membership dues, etc. Pat informed the group that our bank charges for more than one deposit per month. The group suggested that she investigate other banking options and bring that

information to the January meeting.

Discussion was held on conducting a special licensing exam for students of the Tech class. Target date is December 12th at 09:00. Bill Smith will confirm that a room will be available at North Country for the exam.

The group was informed that Baofeng programming instructions are now available on our website. <http://cocoradio.club/TechnicianClass/index.php?n=Main.CHIRP>. Also Joe Hobart has a list of repeaters we use – contact him if you need a copy.

In old business:

ISS Contact – Kaci Hines has submitted the application. Timeframe is from the beginning of the school year to 1st week of November. We will know in December if the application is approved. It was discussed that the dates later in the fall could cause issues due to the weather. In the Letter of Commitment Sandy Meadowcroft has asked for a lift to help get people and equipment onto the roof. Joe Hobart asked that more of the CARC members get involved since it is a very involved process. To get alerts as to when the ISS is passing over Flagstaff go to <http://spotthestation.nasa.gov/home.cfm>. Pat also mentioned that Kaci Hines was awarded Middle School Teacher of the year.

CARC trailer replacement – there has been no progress in finding a new trailer. A cost limit of \$2,000 was discussed as well as our target size of 12' for the trailer. It was suggested that it would also be nice to have a window. Members were asked to investigate used trailers as cargo trailers or toy haulers could be converted to our specific needs.

Yaesu Repeater at Mund's Park: Ken Held reported that the repeater is up and is currently being successfully tested.

New CARC mail list: Old email list is discontinued. Please use carclist@googlegroups.com

Williams Repeater: There were no updates.

Elden Repeater: Repeater has recently dropped out during the Skywarn and ARES nets. Joe is monitoring the situation.

Sandy gave a quick calendar update of upcoming events:

Nov 14 Girl's - On -The - Run, Sandy and Dawnelle Shehan co-coordinators. There are enough volunteers for the event. Tom Shehan will be net control since Erv and Kay Perelstein are out of town.

Dec 5 Skywarn Recognition Day, NWS Belmont, Mike Clever/Scott coordinating. Mike asked for more volunteers. This event will run from Fri December 4, 17:00- December 5, 17:00 at the National Weather Service in Bellemont. This is a 24 hr nationwide event.

Dec 6 Christmas Party, Sandy & Bob Meadowcroft hosting in their home, @ 14:00.

ARES Report: Joe reported that the Nov 4th Alt EOC exercise was very successful. There were very good communications and all objectives were contacted. The Alt EOC location was well received and may be the permanent location- with Amateur Radio having a semi-permanent home at the site. A

separate radio room, coax run to the outside and a potential 35' flagpole (that could be used for an antenna) were some of details mentioned.

A weak point mentioned was the inconsistent use of ICS forms. Joe stressed the importance to go digital. He encouraged members to learn digital over the next year.

We will hold VE Testing sessions on Dec 12th, Jan 16, 2016 and April 16th. All three sessions will be held at North Country Health Care on 4th Street. There will also be testing at Williams Hamfest in July.

50/50: Dawnelle Shehan won the 50/50 raffle.

There being no further business, Bill Smith moved and Joe seconded a motion to adjourn. Passed unanimously.

Meeting Ended: 20:30.

Presentations: No additional presentations this month.

For those of you that have not tried HF, please consider it. Learn it, use it and stay current. In times of emergency, we will need all the good, practiced and available General and Extra HAM we can get.

Can you answer these questions?

General License Exam:

Which symbol in figure G7-1 represents a field effect transistor?

- A. Symbol 2
- B. Symbol 5
- C. Symbol 1
- D. Symbol 4

Which symbol in figure G7-1 represents a Zener diode?

- A. Symbol 4
- B. Symbol 1
- C. Symbol 11
- D. Symbol 5

Which symbol in figure G7-1 represents an NPN junction transistor?

- A. Symbol 1
- B. Symbol 2
- C. Symbol 7
- D. Symbol 11

Which symbol in Figure G7-1 represents a multiple-winding transformer?

- A. Symbol 4
- B. Symbol 7
- C. Symbol 6

D. Symbol 1

Which symbol in Figure G7-1 represents a tapped inductor?

- A. Symbol 7
- B. Symbol 11
- C. Symbol 6
- D. Symbol 1

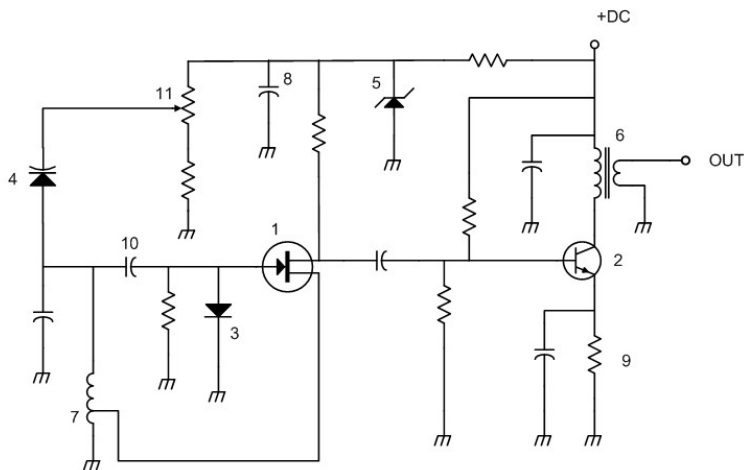


Figure G7-1

Amateur Extra License Exam

Which point on Figure E5-2 best represents that impedance of a series circuit consisting of a 400 ohm resistor and a 38 picofarad capacitor at 14 MHz?

- A. Point 2
- B. Point 4
- C. Point 5
- D. Point 6

Which point in Figure E5-2 best represents the impedance of a series circuit consisting of a 300 ohm resistor and an 18 microhenry inductor at 3.505 MHz?

- A. Point 1
- B. Point 3
- C. Point 7
- D. Point 8

Which point on Figure E5-2 best represents the impedance of a series circuit consisting of a 300 ohm resistor and a 19 picofarad capacitor at 21.200 MHz?

- A. Point 1
- B. Point 3
- C. Point 7
- D. Point 8

In Figure E6-1, what is the schematic symbol for a PNP transistor?

- A. 1
- B. 2
- C. 4
- D. 5

In Figure E6-2, what is the schematic symbol for an N-channel dual-gate MOSFET?

- A. 2
- B. 4
- C. 5
- D. 6

In Figure E6-2, what is the schematic symbol for a P-channel junction FET?

- A. 1
- B. 2
- C. 3
- D. 6

In Figure E6-3, what is the schematic symbol for a light-emitting diode?

- A. 1
- B. 5
- C. 6
- D. 7

In Figure E6-5, what is the schematic symbol for an AND gate?

- A. 1
- B. 2
- C. 3
- D. 4

In Figure E6-5, what is the schematic symbol for a NAND gate?

- A. 1
- B. 2
- C. 3
- D. 4

In Figure E6-5, what is the schematic symbol for an OR gate?

- A. 2
- B. 3
- C. 4
- D. 6

In Figure E6-5, what is the schematic symbol for a NOR gate?

- A. 1
- B. 2
- C. 3
- D. 4

In Figure E6-5, what is the schematic symbol for the NOT operation (inverter)?

- A. 2
- B. 4
- C. 5
- D. 6

In Figure E7-1, what is the purpose of R1 and R2?

- A. Load resistors
- B. Fixed bias
- C. Self bias
- D. Feedback

In Figure E7-1, what is the purpose of R3?

- A. Fixed bias
- B. Emitter bypass
- C. Output load resistor
- D. Self bias

What type of circuit is shown in Figure E7-1?

- A. Switching voltage regulator

- B. Linear voltage regulator
- C. Common emitter amplifier
- D. Emitter follower amplifier

In Figure E7-2, what is the purpose of R?

- A. Emitter load
- B. Fixed bias
- C. Collector load
- D. Voltage regulation~~

In Figure E7-2, what is the purpose of C2?

- A. Output coupling
- B. Emitter bypass
- C. Input coupling
- D. Hum filtering

What is the purpose of Q1 in the circuit shown in Figure E7-3?

- A. It provides negative feedback to improve regulation
- B. It provides a constant load for the voltage source
- C. It increases the current-handling capability of the regulator
- D. It provides D1 with current

What is the purpose of C2 in the circuit shown in Figure E7-3?

- A. It bypasses hum around D1
- B. It is a brute force filter for the output
- C. To self-resonate at the hum frequency
- D. To provide fixed DC bias for Q1

What type of circuit is shown in Figure E7-3?

- A. Switching voltage regulator
- B. Grounded emitter amplifier
- C. Linear voltage regulator
- D. Emitter follower

What is the purpose of C1 in the circuit shown in Figure E7-3?

- A. It resonates at the ripple frequency
- B. It provides fixed bias for Q1
- C. It decouples the output
- D. It filters the supply voltage

What is the purpose of C3 in the circuit shown in Figure E7-3?

- A. It prevents self-oscillation
- B. It provides brute force filtering of the output
- C. It provides fixed bias for Q1
- D. It clips the peaks of the ripple

What is the purpose of R1 in the circuit shown in Figure E7-3?

- A. It provides a constant load to the voltage source
- B. It couples hum to D1
- C. It supplies current to D1
- D. It bypasses hum around D1

What is the purpose of R2 in the circuit shown in Figure E7-3?

- A. It provides fixed bias for Q1
- B. It provides fixed bias for D1
- C. It decouples hum from D1
- D. It provides a constant minimum load for Q1

What is the purpose of D1 in the circuit shown in Figure E7-3?

- A. To provide line voltage stabilization
- B. To provide a voltage reference
- C. Peak clipping
- D. Hum filtering

What magnitude of voltage gain can be expected from the circuit in Figure E7-4 when R_1 is 10 ohms and R_F is 470 ohms?

- A. 0.21
- B. 94
- C. 47
- D. 24

How does the gain of an ideal operational amplifier vary with frequency?

- A. It increases linearly with increasing frequency
- B. It decreases linearly with increasing frequency
- C. It decreases logarithmically with increasing frequency
- D. It does not vary with frequency

What will be the output voltage of the circuit shown in Figure E7-4 if R_1 is 1000 ohms, R_F is 10,000 ohms, and 0.23 volts dc is applied to the input?

- A. 0.23 volts
- B. 2.3 volts
- C. -0.23 volts
- D. -2.3 volts

What absolute voltage gain can be expected from the circuit in Figure E7-4 when R_1 is 1800 ohms and R_F is 68 kilohms?

- A. 1
- B. 0.03
- C. 38
- D. 76

What absolute voltage gain can be expected from the circuit in Figure E7-4 when R_1 is 3300 ohms and R_F is 47 kilohms?

- A. 28
- B. 14
- C. 7
- D. 0.07

In the antenna radiation pattern shown in Figure E9-1, what is the 3-dB beamwidth?

- A. 75 degrees
- B. 50 degrees
- C. 25 degrees
- D. 30 degrees

In the antenna radiation pattern shown in Figure E9-1, what is the front-to-back ratio?

- A. 36 dB
- B. 18 dB
- C. 24 dB
- D. 14 dB

In the antenna radiation pattern shown in Figure E9-1, what is the front-to-side ratio?

- A. 12 dB
- B. 14 dB
- C. 18 dB
- D. 24 dB

What type of antenna pattern over real ground is shown in Figure E9-2?

- A. Elevation
- B. Azimuth
- C. Radiation resistance
- D. Polarization

What is the elevation angle of peak response in the antenna radiation pattern shown in Figure E9-2?

- A. 45 degrees
- B. 75 degrees
- C. 7.5 degrees

D. 25 degrees

What is the front-to-back ratio of the radiation pattern shown in Figure E9-2?

- A. 15 dB
- B. 28 dB
- C. 3 dB
- D. 24 dB

How many elevation lobes appear in the forward direction of the antenna radiation pattern shown in Figure E9-2?

- A. 4
- B. 3
- C. 1
- D. 7

What type of chart is shown in Figure E9-3?

- A. Smith chart
- B. Free-space radiation directivity chart
- C. Elevation angle radiation pattern chart
- D. Azimuth angle radiation pattern chart

On the Smith chart shown in Figure E9-3, what is the name for the large outer circle on which the reactance arcs terminate?

- A. Prime axis
- B. Reactance axis
- C. Impedance axis
- D. Polar axis

On the Smith chart shown in Figure E9-3, what is the only straight line shown?

- A. The reactance axis
- B. The current axis
- C. The voltage axis
- D. The resistance axis

Figure E5-2

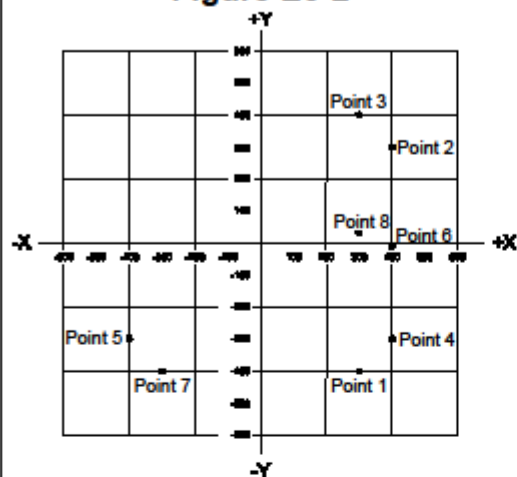


Figure E6-1

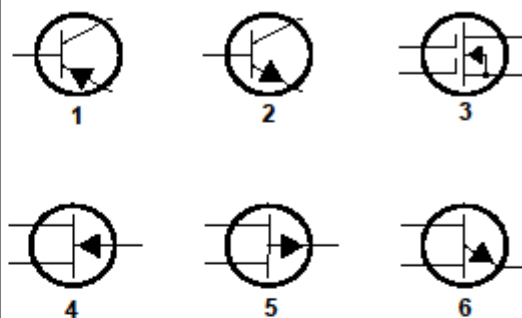


Figure E6-2

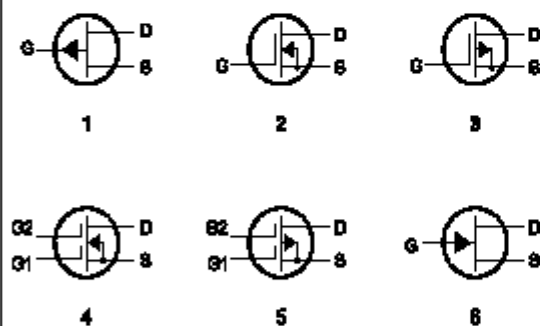


Figure E6-3

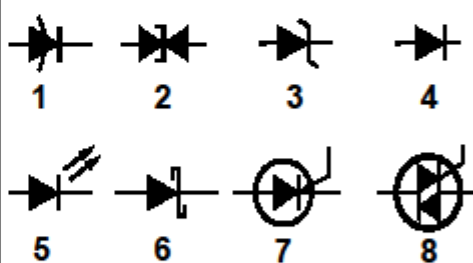


Figure E6-5

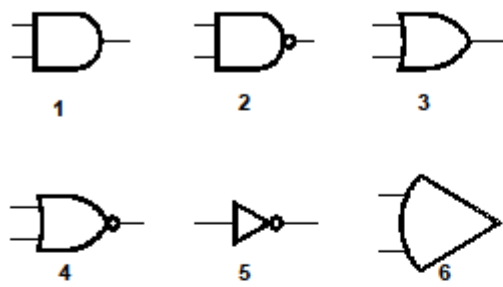


Figure E7-1

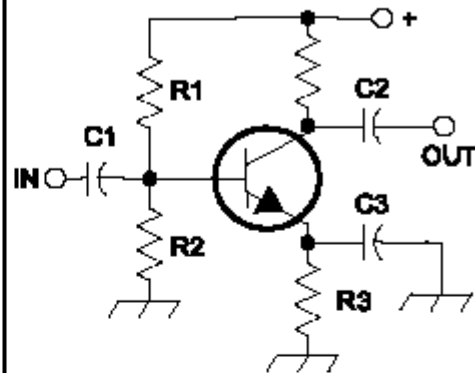


Figure E7-2

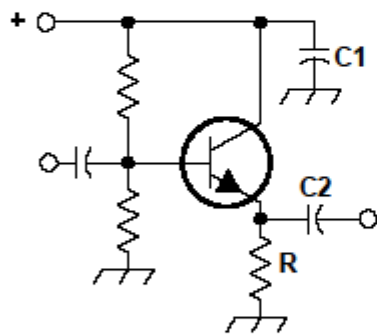


Figure E7-3

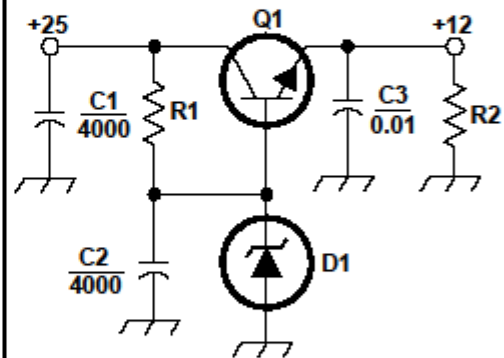


Figure E7-4

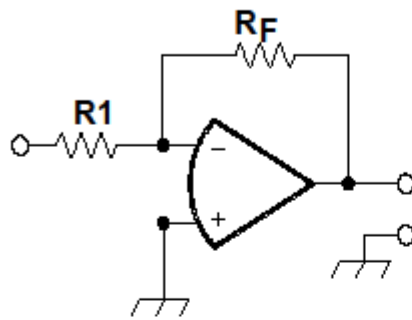


Figure E9-1

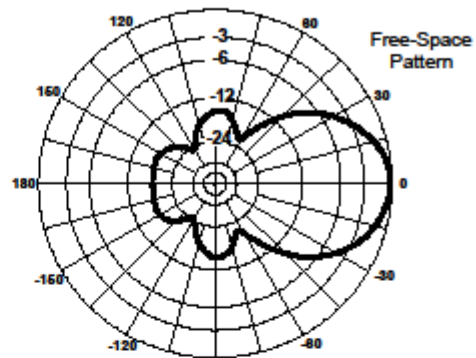


Figure E9-2

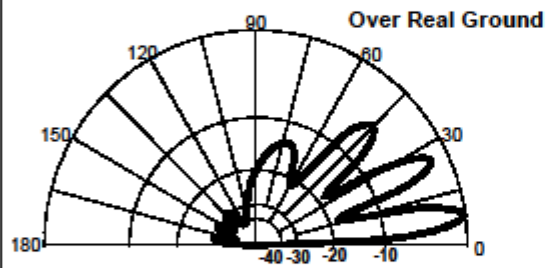
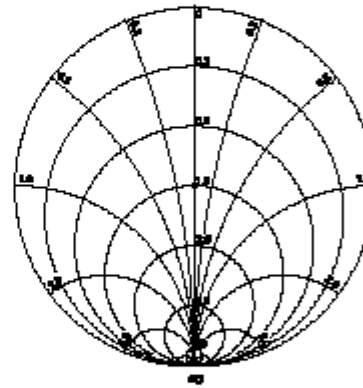
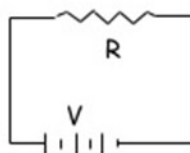
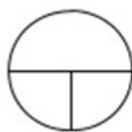


Figure E9-3



$$V=IR$$



1. A current of 3.7 amps is running through a circuit like the one above with a resistance of 1.5 ohms. What is the voltage?
2. If the current in the circuit above is 10 amps and the resistance is 3 ohms, what is the voltage?
3. If the battery in the circuit above is 24 V and the resistance is 12 ohms, what is the current, I?
4. Given a voltage of 120 volts and a current of 5 amps, what is the resistance?
5. Given a resistance of 1500 ohms and a current of 0.03 amps, what's the voltage?
6. Resistance is 200 ohms and voltage is 24 V. Find I.
7. Battery potential is 12 volts and current is 2.7 amps. What's the resistance?
8. House current is 120 volts. If a light bulb runs a current of 0.5 amps, what's the resistance of the bulb?
9. Your car battery is a 12 V DC source. Typically you might find a fuse that can handle a 5 amp surge. What resistance is that fuse protecting?
10. You might have a flashlight that runs (2) D-cells of 1.5 volts each in series. The bulb is rated for 0.7 amps. What's its resistance?

Happy New Year Everyone.

The Arizona Repeater Association replaced the dangling antenna Saturday, and the 146.980 repeater appears to be working well. The replacement antenna is smaller than the previous one, so we may see a slight loss of signal strength with distant stations.

We will use the 146.980 repeater for SkyWarn and ARES nets starting this Monday evening. 146.980 simplex and the 448.475 repeater will be backup frequencies.

Here is a picture of the tower with the new antenna at the top. The very top of the tower failed during icy and windy conditions around Christmas.

Thanks to the entire Arizona Repeater Association for keeping our repeaters working despite serious winter weather on Mount Elden.

The weather bureau predicts considerable snow during the rest of this week. Counting up the predicted totals for today through Thursday I get from 10 to 23 inches possible. Keep your batteries charged, and drive carefully.

73,
Joe, W7LUX