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# Matching Exercises

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MELEP Quiz #8

**Master Electrician Exam Prep Quiz #8**

Select a letter which represents the best match for each of the numbered quantities. An answer may be used once, more than once, or not at all.

answer	question	number	NEC	letter	description
	1.	5/8		a.	% normal voltage supplied by storage battery for 1 1/2 hours
	2.	3/4		b.	persons minimum to identify a place of assembly
	3.	1		c.	threads of factory made conduit engaged at hazardous enclosures
	4.	1.5		d.	feet maximum length cord for mobile home
	5.	2		e.	standard rating of overcurrent device
	6.	2.5		f.	% maximum voltage drop at controller line terminals for fire pump
	7.	4 1/2		g.	spaces maximum in lighting and appliance panel boards
	8.	5		h.	volts between conductors requires a vault
	9.	6'7"		i.	inch minimum thickness of sealing compound
	10.	12 1/2		j.	volts applied to test dielectric strength of recreational vehicle
	11.	15		k.	maximum height disconnect handle used as switch
	12.	21		l.	maximum amps for a subdivided load
	13.	35		m.	% branch circuit voltage drop maximum for sensitive electronic equipment
	14.	36		n.	feet minimum length power cord for mobile home
	15.	36 1/2		o.	times multiplier for angle pulls for pull boxes over 600 volts - shielded
	16.	42		p.	inch taper per foot on rigid metal conduit
	17.	48		q.	degrees panel door on crane cover must open
	18.	87 1/2		r.	feet above highest water level under normal conditions is datum plane
	19.	90		s.	days remaining to work in the electrical trade
	20.	100		t.	threads of field threaded conduit engaged at hazardous enclosures
	21.	110		u.	% minimum area of largest phase conductor for service bonding jumper
	22.	900		v.	minute each recreational vehicle subject to 900 volt dielectric test
	23.	1000		w.	mm size of film to identify a professional projector
	24.	1500		x.	% total voltage drop maximum for sensitive electronic equipment
	25.	35000		y.	watts maximum for work lights on motion picture studio set
				z.	watts maximum for mogul base incandescent lamp

## Answers Master Electrician License Exam Prep #8

answer	question	number	NEC	letter	description
i	1.	5/8	501.15C3	a.	% normal voltage supplied by storage battery for 1 1/2 hours
p	2.	3/4	344.28	b.	persons minimum to identify place of assembly
v	3.	1	551.60	c.	threads of factory made conduit engaged at hazardous enclosures
m	4.	1.5	647.4D	d.	feet maximum length cord for mobile home
r	5.	2	555.2	e.	standard rating of overcurrent device
x	6.	2.5	647.4D	f.	% maximum voltage drop at controller line terminals for fire pump
c	7.	4 1/2	500.8D	g.	spaces maximum in lighting and appliance panel boards
f	8.	5	500.8D ex.	h.	volts between conductors requires a vault
k	9.	6'7"	404.8A	i.	inch minimum thickness of sealing compound
u	10.	12 1/2	250.102C	j.	volts applied to test dielectric strength of recreational vehicle
f	11.	15	695.7	k.	maximum height disconnect handle used as switch
n	12.	21	550.10D	l.	maximum amps for a subdivided load
w	13.	35	540.2	m.	% branch circuit voltage drop maximum for sensitive electronic equipment
o	14.	36	314.71B	n.	feet minimum length power cord for mobil home
d	15.	36 1/2	550.10D	o.	times multiplier for angle pulls for pull boxes over 600 volts - shielded
g	16.	42	408.35	p.	inch taper per foot on rigid metal conduit
l	17.	48	314.71A	q.	degrees panel door on crane cover must open
a	18.	87 1/2	700.12A	r.	feet above highest water level under normal conditions is datum plane
q	19.	90	610.57	s.	days remaining to work in the electrical trade
b	20.	100	100	t.	threads of field threaded conduit engaged at hazardous enclosures
e	21.	110	240.6	u.	% minimum area of largest phase conductor for service bonding jumper
j	22.	900	551.60	v.	minute each recreational vehicle subject to 900 volt dielectric test
y	23.	1000	530.18G	w.	mm size of film to identify professional projector
z	24.	1500	410.53	x.	% total voltage drop maximum for sensitive electronic equipment
h	25.	35000	230.212	y.	watts maximum for work lights on motion picture studio set
				z.	watts maximum for mogul base incandescent lamp

MELEP Quiz #9

MELEP Quiz #9

answer	question	number	NEC	letter	description
	1.	0.5		a.	inches width of work spaces under 600 volts
	2.	0.8		b.	feet closest switch can be to inside wall of pool
	3.	2'		c.	conduit fill result or more can round up
	4.	3		d.	maximum tap length
	5.	3 1/2		e.	% fill for nipples maximum
	6.	4		f.	% fill for 2 conductors in a raceway
	7.	5		g.	amps or less can use next higher overcurrent protection
	8.	6		h.	feet maximum length flex cord 208 240v room AC
	9.	6 1/2		i.	% derate for 4-6 conductors in a raceway
	10.	8		j.	% fill 3 conductors or more in a raceway
	11.	9 1/2		k.	minimum head room where panel is installed
	12.	10		l.	minimum CATV cable above roof
	13.	11 1/2		m.	% fill 1 conductor in a raceway
	14.	15 1/2		n.	or more is considered a major fraction
	15.	20		o.	min distance top of switchboard to combustible ceiling
	16.	23		p.	broadband lead-in clearance over residential property
	17.	30		q.	max length rubber cord to connect office partition
	18.	31		r.	max flex cord 120v room AC
	19.	40		s.	depth minimum working clearance 151-600v to grounded
	20.	53		t.	depth min working clearance 151-600v live both sides
	21.	60		u.	broadband clearance over car traffic
	22.	75		v.	min length cord for park trailer with cord entrance at side
	23.	80		w.	broadband clearance over heavy truck traffic
	24.	100		x.	% fill auxiliary gutter at splice point
	25.	800		y.	CATV grounding conductor max length
				z.	inches separation between covers of the NEC

## MELEP Quiz #9 - Answers

answer	question	number	NEC	letter	description
n	1.	0.5	Annex D	a.	inches width of work spaces under 600 volts
c	2.	0.8	Ch9T1n7	b.	feet closest switch can be to inside wall of pool
q	3.	2'	605.4	c.	conduit fill result or more can round up
o	4.	3	408.18A	d.	maximum tap length
s	5.	3 1/2	110.26A1	e.	% fill for nipples maximum
t	6.	4	110.26A	f.	% fill for 2 conductors in a raceway
b	7.	5	680.22C	g.	amps or less use next higher overcurrent device
h	8.	6	440.64	h.	feet max length flex cord 208 240v room AC
k	9.	6 1/2	110.26E	i.	% derate for 4-6 conductors in a raceway
l	10.	8	820.44D	j.	% fill 3 conductors or more in a raceway
p	11.	9 1/2	830.44D1	k.	minimum head room where panel is installed
r	12.	10	440.64	l.	minimum CATV cable above roof
u	13.	11 1/2	830.44D2	m.	% fill 1 conductor in a raceway
w	14.	15 1/2	830.44D3	n.	or more is considered a major fraction
y	15.	20	820.100A4	o.	min distance top of switchboard to combustible ceiling
v	16.	23	552.44B	p.	broadband lead-in clearance over residential property
a	17.	30	110.26A2	q.	max length rubber cord to connect office partition
f	18.	31	Ch9T1	r.	max flex cord 120v room AC
j	19.	40	Ch9T1	s.	depth minimum working clearance 151-600v to grounded
m	20.	53	Ch9T1	t.	depth min working clearance 151-600v live both sides
e	21.	60	Ch9T1n4	u.	broadband clearance over car traffic
x	22.	75	366.56A	v.	min length cord for park trailer with cord entrance at side - 28 rear
i	23.	80	310.15B2a	w.	broadband clearance over heavy truck traffic
d	24.	100	240.21B4	x.	% fill auxiliary gutter at splice point
g	25.	800	240.4B	y.	CATV grounding conductor max length
				z.	inches separation between covers of the NEC

AC Formulas Match

Alternating Current Formulas Match

Answer	Question	Term	Letter	Formula
	1	E	a	$I_1 = I_2 = I_3 = I_4$
	2	I	b	$P_{eff} / 746$
	3	R	c	$W / VA$
	4	P	d	$VAR / W$
	5	W	e	$P_1 + P_2 + P_3 + P_4$
	6	VA	f	$\tan R$
	7	Z	g	$R_1 + R_2 + R_3 + R_4$
	8	VAR	h	$VAR / VA$
	9	eff	i	2nd key then Function key
	10	pf	j	$E_1 + E_2 + E_3 + E_4$
	11	sin	k	pf Z
	12	cos	l	$1 / 1/C_1 + 1/C_2 + 1/C_3 + 1/C_4$
	13	tan	m	$P_1 = P_2 = P_3 = P_4$
	14	angle in degrees	n	$W / VA$
	15	HP	o	$E / Z$
	16	XL	p	$R / pf$
	17	XC parallel	q	$R VA / Z$
	18	E series	r	$1 / 1/R_1 + 1/R_2 + 1/R_3 + 1/R_4$
	19	E parallel	s	$W \tan$
	20	I series	t	$W / pf$
	21	I parallel	u	$I \text{ squared } R \text{ 1.732}$
	22	R series	v	$Z I$
	23	R parallel	w	$E_1 = E_2 = E_3 = E_4$
	24	P series	x	$P / W$
	25	P parallel	y	$I_1 + I_2 + I_3 + I_4$
			z	$C_1 + C_2 + C_3 + C_4$

Motor Match

	1.	design B spec article	a.	can go up
	2.	synchronous 3 phase motor	b.	300% table flc
	3.	branch circuit conductor	c.	test armature
	4.	motor overloads service factor 1.3	d.	425% table flc
	5.	ampacity under 100 amps	e.	115% table flc
	6.	if feeder overcurrent calc does not match 240.6	f.	430.52
	7.	motor single phase flc article	g.	use 75 degrees C wire
	8.	growler	h.	250% table flc
	9.	motor NEC article	i.	in sight not more than 50 feet distant
	10.	feeder 4 motors all same	j.	largest device plus other table flc
	11.	three phase motor flc article	k.	if pf .9 use 110% .8 use 125%
	12.	motor overloads service factor	l.	140% nameplate
	13.	motor branch circuit protection breaker	m.	125% largest table plus other table flc
	14.	motor branch circuit protection renewable fuse	n.	125% table flc
	15.	motor branch circuit protection dual element fuse	o.	nameplate flc
	16.	ampacity over 100	p.	go down
	17.	standard rating ocpd	q.	125% nameplate
	18.	feeder overcurrent protection	r.	430.250
	19.	reverse three phase motor direction	s.	separate
	20.	disconnect	t.	use 60 degrees C wire
	21.	feeder conductor if motors different	u.	175% table flc
	22.	branch circuit overcurrent calculation not match 240.6	v.	430.251
	23.	motor controller	w.	interchange any 2 legs
	24.	motor branch circuit overcurrent protection article	x.	430
	25.	motor overloads	y.	430.248
			z.	240.6

Matching NEC 680 Measurements

Pool Measurements Matching

	1.	4"		a.	depth of water in wading pool
	2.	8"		b.	pattern measurement for equipotential grid
	3.	12" x 12"		c.	clearance 15-50kV to base of dive platform
	4.	18"		d.	raceway can not be closer to pool than ____
	5.	3'		e.	min distance ceiling fan to indoor pool if GFCI
	6.	42"		f.	fountain cord maximum length ____
	7.	4'		g.	clearance ____ 0-750v to dive platform
	8.	5'		h.	min distance radiant heater over indoor pool
	9.	5'		i.	cord connected fixture ground #12 if ____ or less
	10.	6'		j.	clearance ____ 0-15kV to base of dive platform
	11.	6'		k.	closest any receptacle can be to wall of pool
	12.	7'6"		l.	clearance ____ 15-50kV to dive platform
	13.	10'		m.	pool light J box above max water level at least
	14.	10'		n.	closest a switch can be to the wall of a pool
	15.	12'		o.	pool must have ____ water to be swimming pool
	16.	12'		p.	clearance 0-750v to base of dive platform
	17.	14.5'		q.	clearance to communications cables above pool
	18.	15'		r.	underwater wall light below water level
	19.	16'		s.	minimum height fan must be over indoor pool
	20.	17'		t.	maximum length SPA cord if GFCI protected
	21.	18'		u.	clearance 0-15kV to dive platform
	22.	20'		v.	pool light J box min ____ above ground
	23.	22.5'		w.	receptacles need not be GFCI if away at least ____
	24.	25'		x.	pool light flush deck box min ____ from pool wall
	25.	27'		y.	max length LTFNMC to SPA connection
				z.	cord for pulg GFCI connected equipment not longer than



Transformer Match

	1.	number turns primary	a.	secondary
	2.	primary winding (not p or h)	b.	one winding
	3.	megger	c.	Es
	4.	line side (not i)	d.	eff
	5.	H1 H2	e.	Ps
	6.	secondary voltage lower than primary	f.	Ns
	7.	primary voltage symbol	g.	terminal input
	8.	ratio	h.	primary
	9.	when eff = 100% Pp =	i.	line side
	10.	load side	j.	step down
	11.	primary voltage lower than secondary	k.	Ip
	12.	secondary voltage symbol	l.	test insulation strength
	13.	secondary windings symbol	m.	primary: secondary
	14.	auto transformer	n.	separates high voltage from low
	15.	X1 X2	o.	Ep
	16.	primary current symbol	p.	Np
	17.	NEC article transformers	q.	terminals output
	18.	isolation transformer	r.	three phase
	19.	vault	s.	snail
	20.	enclosure grounding conductor	t.	Is
	21.	efficiency abbreviation	u.	step up
	22.	wire delta connection		250.122
	23.	secondary current symbol	w.	enclosed high voltage transformer
	24.	barrier plate	x.	no reference to earth
	25.	number of turns secondary symbol	y.	450
			z.	230

Pull Boxes Match

Pull Boxes Match - Note: all boxes are minimum square dimension.

answer	Term	NEC Reference		inches sq.
	1. 6" straight pull		a.	12
	2. 2 inches to corner 3" U pull		b.	15
	3. 2 1/2 " angle pull far corners		c.	16
	4. 2" angle pull both in middle of wall of box		d.	18
	5. 7" to corner 4" U pull		e.	18.9
	6. 6" angle pull both in middle of wall of box		f.	19
	7. 4" angle pull far corners		g.	20
	8. 3" to corners 3" U pull		h.	23.7
	9. 1" to corners 3" U pull		i.	24
	10. 4" straight pull		j.	26
	11. 2 1/2 " straight pull		k.	28
	12. 3" angle pull both in middle of wall of box		l.	28.4
	13. 6" angle pull far corners		m.	30
	14. 1 1/2" to corner 2" U pull		n.	32
	15. 3" to corner 6" U pull		o.	34
	16. 3" angle pull far corners		p.	36
	17. 2" angle pull far corners		q.	37.9
	18. 5" to corner 4" U pull		r.	38
	19. 2 1/2" angle pull both in middle of wall of box		s.	40
	20. 4" to corner 4" U pull		t.	42
	21. 5" to corner 3" U pull		u.	44
	22. 4" angle pull both in middle of wall of box		v.	46
	23. 3" to corner 4" U pull		w.	48
	24. 2" straight pull		x.	54
	25. 6" to corner 4" U pull		y.	56.9
			z.	62.6

Matching Exercise Template

**Matching Exercise Template**

answer		Term	NEC Reference		Description
	1.			a.	
	2.			b.	
	3.			c.	
	4.			d.	
	5.			e.	
	6.			f.	
	7.			g.	
	8.			h.	
	9.			i.	
	10.			j.	
	11.			k.	
	12.			l.	
	13.			m.	
	14.			n.	
	15.			o.	
	16.			p.	
	17.			q.	
	18.			r.	
	19.			s.	
	20.			t.	
	21.			u.	
	22.			v.	
	23.			w.	
	24.			x.	
	25.			y.	
				z.	