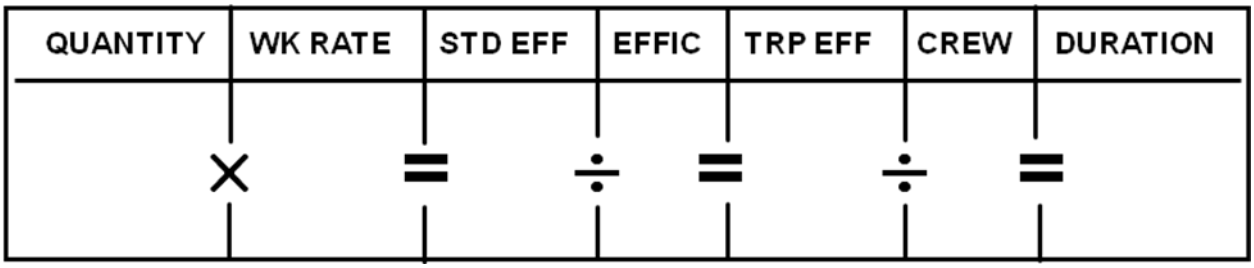
1. Using **TM 5-704** sketch the following: hidden line, center line and dimension line.
2. Use **FM 5-426 chapter 3** to calculate the number of pounds of 16d nails needed for a BOM of 2" x 4" materials having board feet measure equaling 1478'.
3. Referencing **FM 5-412 appendix C**. How many 18" wood shingles are required when roofing a 4800sf roof?
4. Using **FM 5-412 chapter 2**. How are the late start and late finish values calculated?

5. With reference to **figure 2-14 in FM 5-412** how is the ES figured into the chart?

6. Using the formula below



Determine the duration **referencing the tables in FM 5-412 chapters 6 thru 17** if:
You are working with an electric line crew. You have to string 3750 linear feet of 1/0 wire to include the connections. You have 8 soldiers that are 90 %(0.9) efficient at this type of work. What will be the duration of this project?
STD(standard effort), TRP EFF(troop effort)

7. Sketch a diagram of a framing square depicting its front, back, blade, and tongue using **FM 5-426**.
8. Acquire a framing square from your squad/ platoon's carpenter's toolkit and calculate the length of a common rafter at 5/12 pitch for the first 12 inches of run. **Using FM 5-426 chapter 7, NAVEDRTA (3&2, VOL. 2) chapter 2** *and your peers that have already graduated from EN BNCOC/ EN ALC.*
9. In **FM 5-428** use the **example on page 4-14** to calculate the following: 40'L x 3'w x 8'H, 1 cu./yd every 15 minutes, Temperature 80 degrees, using 2 x 4's and 1" plywood sheathing (weak way), and no. 11 tie wire
10. Which of the following is the nominal dimensions for a concrete block: 7 5/8 x 7 5/8 x 15 5/8 or 8 x 8 x 16? Where in **FM 5-428** is this explained?
11. Using **Table 4-6** and the **example from page 4-19 in FM 5-428**. Determine the spacing of braces for a wall 108 inches high. Using 2 x 4 x 10-foot material, attached 6' from the bottom of the form.

12. Using **FM 5-428**. What is the reference page and paragraph for the definition of L max?

13. Using **FM 5-428**. What table would you reference to calculate the maximum stud (joist) spacing for board sheathing?

14. On a framing square where would you find the Essex Board Measure table?

    a. Blade on the back of the framing square
    b. Tongue on the back of the framing square
    c. Blade on the front of the framing square
    d. Tongue on the front of the framing square

15. According to **FM 5-426**. What tools are needed to execute a building layout?

16. What is handsaw used for during a building layout?

17. In **FM 5-424**. What does the green colored insulation on a wire indicates?

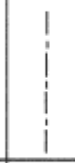
18. There are two (2) ways to splice conductors. What are they and where in FM 5-424 did you find this information?

19. Using **FM 5-420 (FM 3-34.471).** What is a wet vent and on what page did you find this definition?

20. Using **FM 5-420 (FM 3-34.471).** Outline the purpose of traps and name the two common types.

12H CONSTRUCTION SUPERVISOR COURSE PRECOURSE QUIZ ANSWERS

1.

HIDDEN LINES		MEDIUM LINES WITH SHORT, EVENLY SPACED DASHES. USED TO INDICATE CONCEALED EDGES.
CENTER LINES		THIN LINES MADE UP OF LONG AND SHORT DASHES ALTERNATELY SPACED AND CONSISTENT IN LENGTH. USED TO INDICATE SYMMETRY ABOUT AN AXIS AND LOCATION OF CENTERS.
DIMENSION LINES		THIN LINES TERMINATED WITH ARROWHEADS AT EACH END. USED TO INDICATE DISTANCE MEASURED.

2.

Estimating quantity of nails required

- For flooring, sheathing, and other 1-inch material, use the following formula:

$$\textit{Number of pounds (2 penny through 8 penny)} = \frac{\textit{penny}}{4} \times \frac{\textit{board measure}}{100}$$

- For framing materials that are 2 inches or more, use the following formula:

$$\textit{Number of pounds (10 penny through 60 penny)} = \frac{\textit{penny}}{6} \times \frac{\textit{board measure}}{100}$$

Answer: (16/6) x (1478/100) = 39.41 round up to 40lbs of 16d nails

3.

Material	Conversion	Percent waste
Roofing		
Corrugated steel (6-in end lap)		
26-in width	115 sq ft/sq	10
27.5-in width	122 sq ft/sq	15
Wood shingles		
16-in (4-in exposure)	900 ea/sq	15
18-in (6-in exposure)	600 ea/sq	15
24-in (8-in exposure)	450 ea/sq	15

Answer: (4800/100) = 48 + 15% of 8 = 55.2 round up to 56 (18inch wood shingles) for 4800sf of roof.

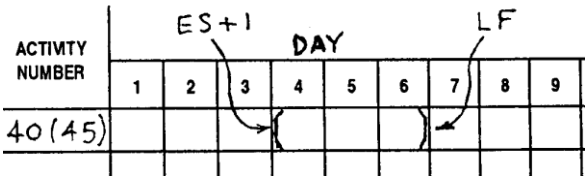
4.

EARLY START (ES) + DURATION = EARLY FINISH (EF)
LATE FINISH (LF) - DURATION = LATE START (LS))

To determine an activity's late finish time when more than one arrow tail leads Away from its node, choose the **smallest** late start time of all activities at the arrows' heads (Figure 2-13).

5.

As a reminder to schedule the right bracket at the beginning (morning) of the following day, use "ES + 1" and "LF" as brackets (Figure 2-14, page 2-14).

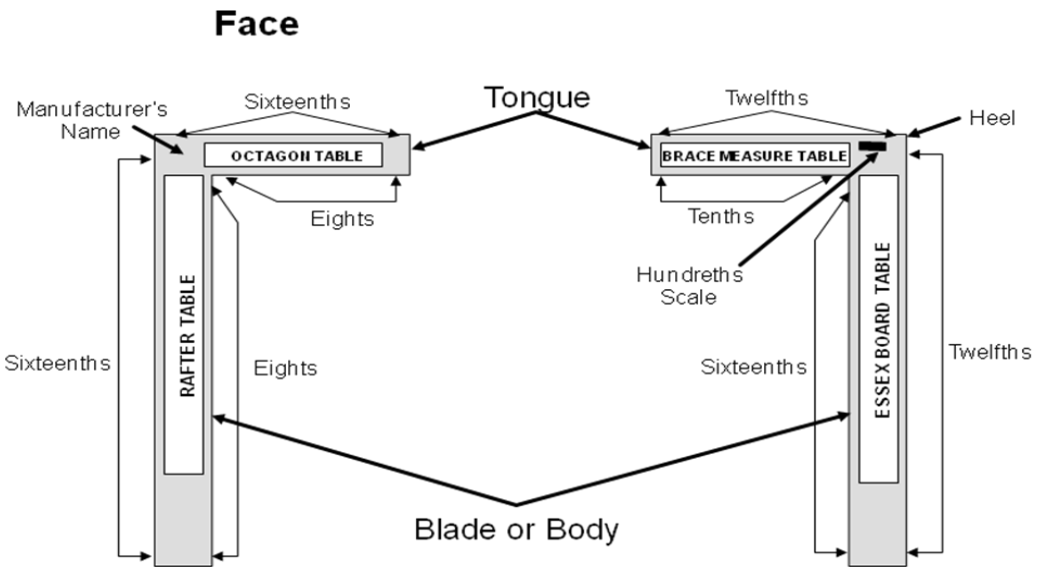


6.

Work element description	Unit	Man-hours/unit
No. 1/0 to No. 4/0 wire	1,000 lin ft	96

Answer: 3750/1,000 = 3.75
3.75 x 96 = 360 /.90 = 400/8 = 50 man hours

7.



8.

Answer: using a 5/12 pitch look at the length of common rafter table on framing square go to 5 then go to the number directly below it. This number 13 represents the common rafter length for the first 12inches of run.

9. Answer:

1	40'L x 3'w x 8'H, 1 cu./yd every 15 minutes, Temperature 80 degrees, using 2 x 4's and 1" plywood sheathing (weak way), and no. 11 tie wire					
2	27	60	1620			
	15	1	15			
	GIVEN	CONSTANT	108.00	cu/ft/hr	PROD. RATE	
3	40	feet long	3	feet wide	120	sq/ft
4	108.00	cu/ft/hr	120	sq/ft	0.90	ft/hr
5	80	degrees				

6	9000	0.90		8100.00						
	80	degrees		80		101.25	150	251	MCP	
							CONSTANT			
7	21	INCH	MSS		TABLE 4-1/4-2					
8	251	MCP	21	MSS	5276.25	12	439.69	LBS/FT	ULS	
9	28	INCHES	MWS		TABLE 4-3					
10	251	MCP	28	7035.00	12	586.25	LB/FT	ULW		
11	35	INCH TIE SPACING		TABLE 4-4						
12	930	12	11160	586.25	19.04	INCH SPACING	19	INCH TIE WIRE SPACING		
	TBL 4-5	GIVEN		ULW						
13	19	INCH TIE WIRE SPACING								
14	19	adjustment for tie wire and stud spacing								
15	40	12	480	19	25.26	1	26.26	RD UP	27	
	LENGTH	CONSTANT		MSS AND TIESPACING		CONSTANT			STUDS	

16	8	12	96	28	3.428571	RD UP	4	WALES
	HEIGHT	CONSTANT		MWS				

17	8	0.90	8.89	RD UP	9.00	HOURS
	HEIGHT	RATE				

10.

Answer:

8-8. Concrete masonry units are available in many sizes and shapes to fit different construction needs. Both full- and half-length sizes are shown in Figure 8-1. Because concrete block sizes usually refer to nominal dimensions, a unit actually measuring 7 5/8 by 7 5/8 by 15 5/8 inches is called an **8- by 8- by 16-inch block**.

11.

Answer:

J = 2,360 feet4 (from Table 4-6)
Lmax = 6 1/4 feet (because of the 2-inch material)
LB = 10 feet
h = 12 feet (from problem)
y = 6 feet (from problem)

sin0 = 6/10 = 0.6 then sin -1 = 36.86989765 round up to 37 degrees

S max = (2360 x 6)/ (144 x 36) = (14160/5184) x cos0
= 2.731481481 x cos37
= 2.18 round down 2 feet

12.

Answer:

Page 4-19, paragraph 4-28

L max = the maximum allowable unsupported length of the brace, in feet, due to buckling and bending.

13.

Answer:

Determine the MSS (refer to Table 4-1).

14.

Answer:

b. Tongue on the back of the framing square

15.

Answer:

LAYOUT

Layout techniques are described in the following paragraphs. The following are the most commonly used layout tools and materials:

· *A* ***string line*** *is used* to distinguish the dimensions of the building layout.
· *A* ***sledgehammer*** *is used* to sink corner stakes or batter boards and posts.
· *A* ***posthole auger*** *is* used to dig the holes required to set posts properly in some soils.
· *A* ***handsaw*** *is* used to cut batter boards and posts.
· *An* ***ax or a hatchet*** *is* used to sharpen batter-board posts and stakes.
· *A* ***hammer*** *is* used for building batter boards.
· *A* ***chalk line*** *is* used to deposit chalk on the surface in order to make a straight guideline.
· *A* ***100-foot/30-meter tape*** *is* used for measuring diagonally (usually in a 100 foot length) and for laying out excavation or foundation lines.
· ***Tracing tape*** *is* used for laying out excavation or foundation lines. The tape is made of cotton cloth approximately 1 inch wide. It usually comes in a 200 foot length.
· *A* ***carpenter's level*** *is* used to level a surface and to sight level lines. It may be used directly on the surface or with a straightedge.
· *A* ***line level*** has a spirit bubble to show levelness. The level is hung from a taut line. It gives the greatest accuracy when it is placed halfway between *the* points to be leveled.
· *An* ***automatic level*** measures approximate differences in elevation *and can* establish *grades* over *limited* distances. The landscape, level bubble, and index line *are* seen *in* the tube.
· ***8d nails*** *are* used to secure string line to batter boards.
· *A* ***plumbing bob*** *is* used to locate the corners of the building dimensions.
· *A* ***framing square*** *is used* to check the squareness of lines.

16.

Answer:

· *A* ***handsaw*** *is* used to cut batter boards and posts.

17.

Answer:

A grounding conductor, used solely for grounding purposes, should be bare or have a green covering

18.

Answer:

Solder-less and soldered. Page 1-4

19.

Answer:

9-22. A wet vent *(Figure 9-12, page 9-10)* is part of a vent line through which liquid wastes flow from another fixture that has an individual vent. It is used most commonly on a small group of bathroom fixtures. Page 9-9

20.

Answer:

9-1. A trap is a fitting or device that, when properly vented, provides a water seal to prevent the discharge of sewer gases without affecting the flow of sanitary drainage through it. P trap and the Drum trap.