PMA Occupational Aptitude & Knowledge Assessment

Read each question and mark on your answer sheet the response or choice (A, B, C or D) that best answers the question, solves the problem or completes the statement.

Make each pencil mark **dark** and shiny, filling in the entire box on the answer sheet. Fill in one corresponding letter-box for each question. There is one BEST answer.

Answer all questions to the best of your ability. Do not use reference materials. You do not need a calculator. You will have up to 60 minutes to complete the assessment.
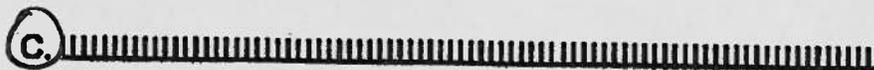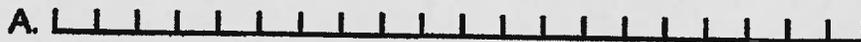
Section 1 - Mechanical & Spatial Reasoning

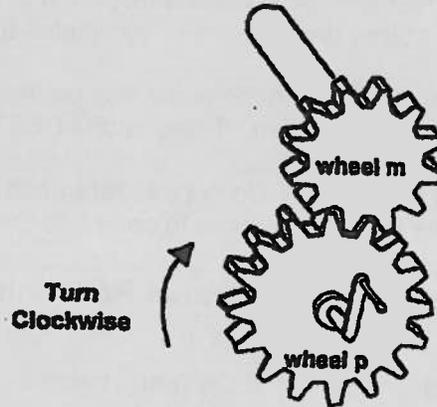1. How many |sets| of <u>four</u> circles are there in the group below?

Group

   a). 4
   b) 11
   (c) 12
   d) 16

2. Which of the four different scales shown below would you use to get the most precise measurement of length?

   A.

   B.

   (C.)

   D.

3. Study the gear wheels below, and then determine which of the following statements is true.


Turn Clockwise

wheel m

wheel p

a) If you turn M clockwise using the handle, wheel P will turn clockwise.
b) It will take the same time for one tooth on P and M to make a full turn.
c) It will take less time for a P tooth to make a full turn than a tooth on M.
d) It will take more time for a P tooth to make a full turn than a tooth on M.

4. The rotation of the gear labeled E in the figure below will be
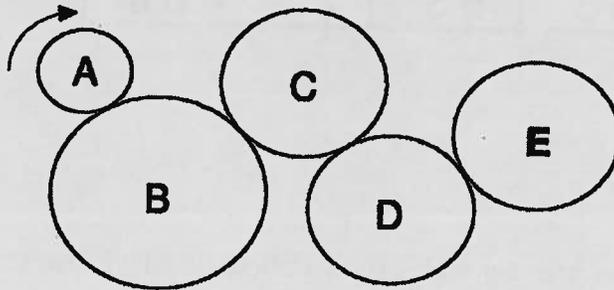
a) clockwise
b) counterclockwise
c) not affected
d) stationary
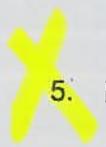
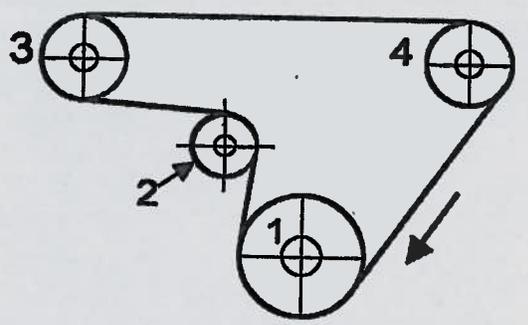**5.** In the arrangement of pulleys shown below, which pulley will turn faster?
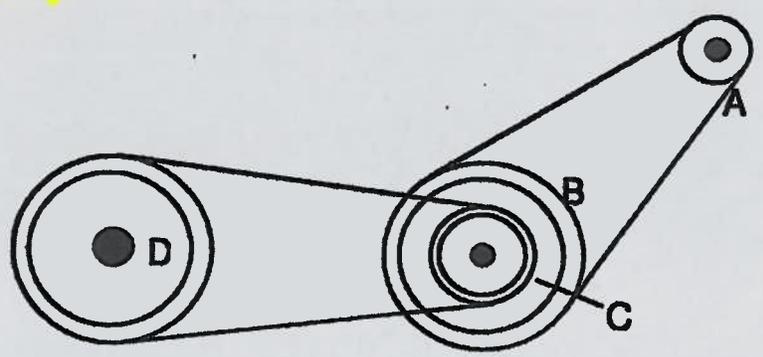
   a) Pulley A
   b) Pulley B
   c) Pulley C
   d) Pulley D

6. Which of the following pulleys will turn in the same direction as pulley #1?

   a) 2 & 4
   b) 2 & 3
   c) 3 & 4
   d) 1 & 2

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7. Which picture below shows the correct fluid level in the small tube after water has been added?
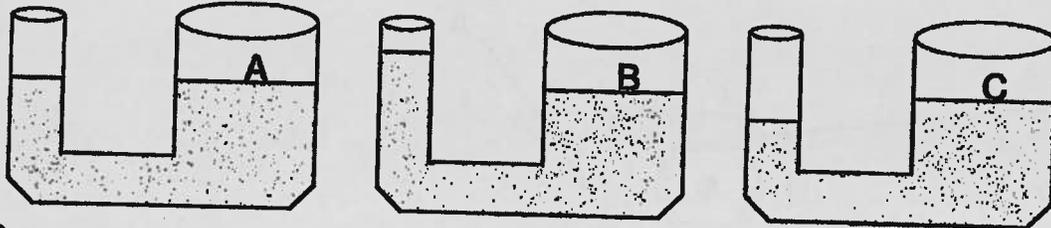
a) Picture A
b) Picture B
c) Picture C
d) None of the above

8. According to the illustration below, at which lift point (A, B or C) should the rope be positioned to lift the platform without tilting it?
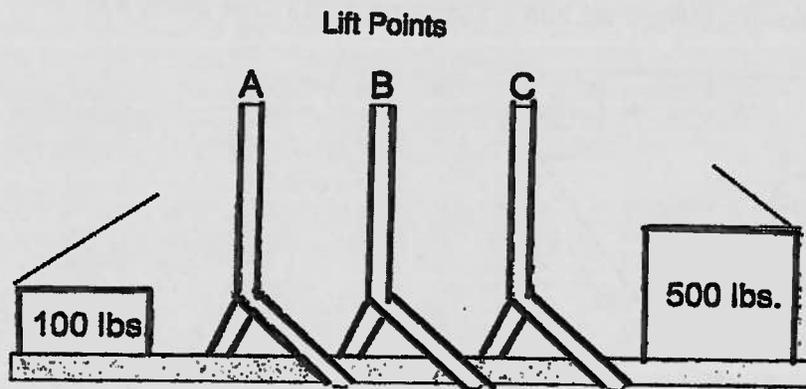
Lift Points

a) Lift Point Position A
b) Lift Point Position B
c) Lift Point Position C
d) It does not matter

9. In the drawings below, which person will use less force to raise the load to the same height?

A

B
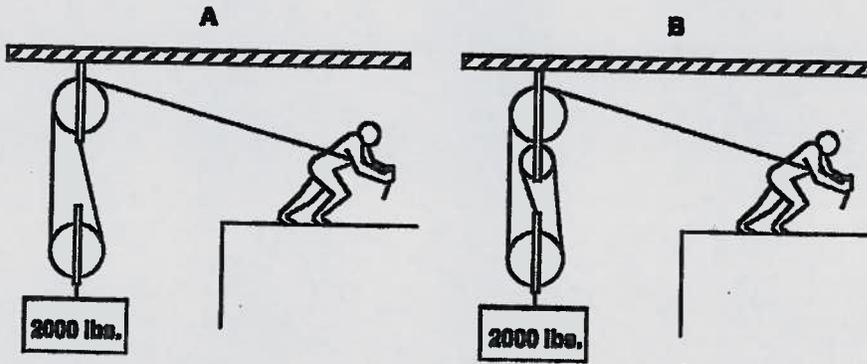
a) The person in drawing A
b) The person in drawing B
c) There will be no difference
d) Not enough information provided

10. Looking at the winch in the direction of the arrow, which way will the crank have to be turned to raise the load?
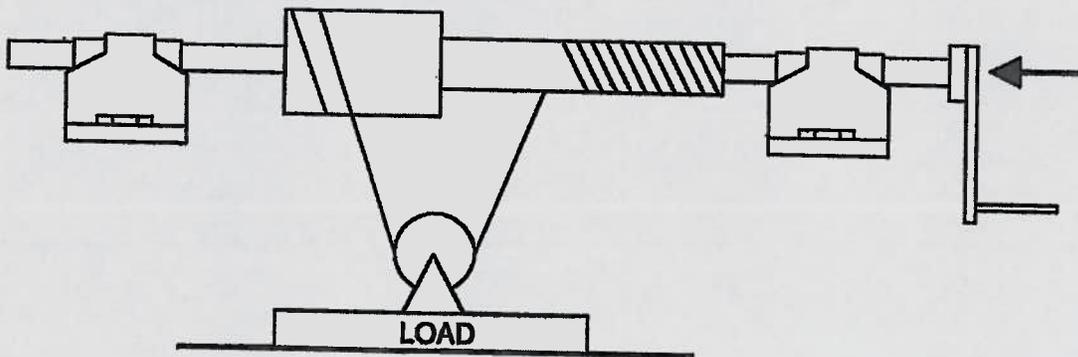
LOAD

a) the load will not raise
b) cannot be determined
c) clockwise
d) counterclockwise

11. Which two images are identical?

A B C D E
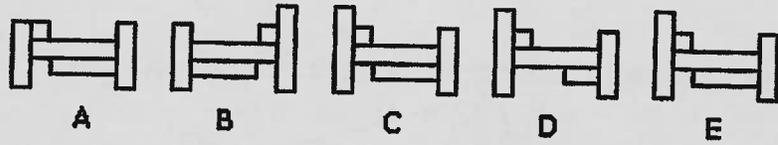
a) A & D
b) B & E
c) C & E
d) E & A

12. Which of the following represents the view in the direction of the arrow (Front view)?

FRONT

1 2

3

4 5
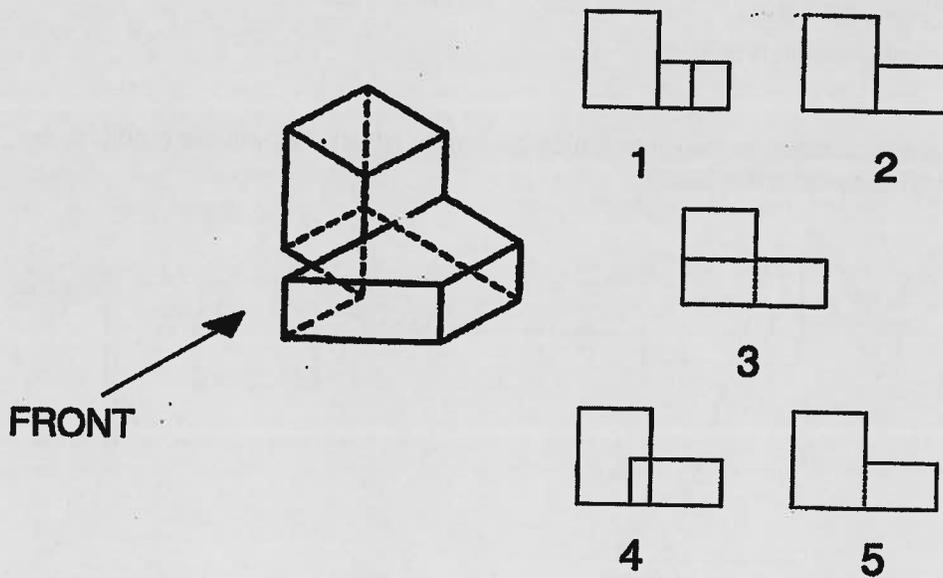
a) 1
b) 2
c) 3
d) 5

13. Which of the following represents the view from the <u>right side</u> of the figure?

FRONT

RIGHT SIDE
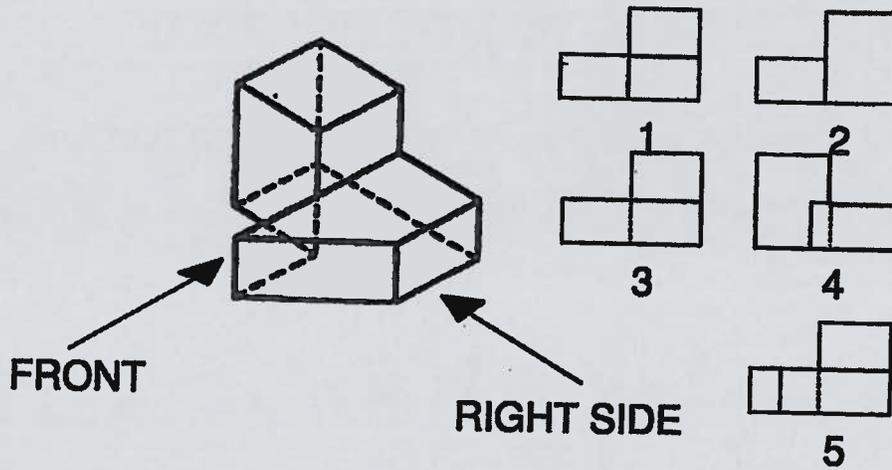
a) 1
b) 2
c) 3
d) 4

14. Which of the following represents the <u>top view</u> of the figure?

FRONT
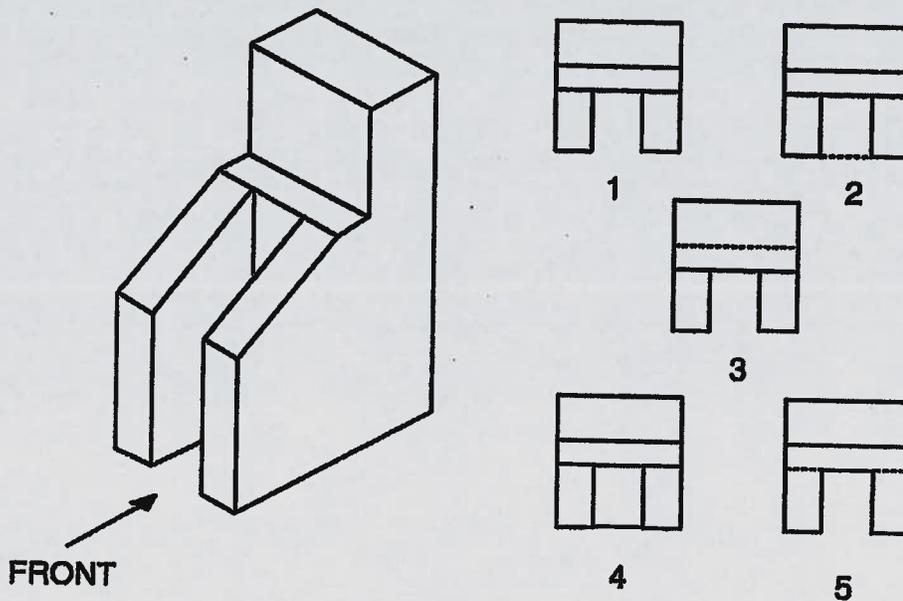
a) 1
b) 3
c) 4
d) 5

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Spatial Vision & Measurement Exercise

- Study the perspective pictorial drawing below and respond to the next **three** questions.

- Unit designations of numbers and answers are not needed (i.e., mm or inches).

- The answers should be the <u>total material depth or length</u> through each dot <u>excluding any air or open gaps and spaces</u>. Think of drilling a hole through the object from the front face that the dot appears on to the opposite extreme face of the object.

- Select your numerical answer choice in the space corresponding to the dot number.
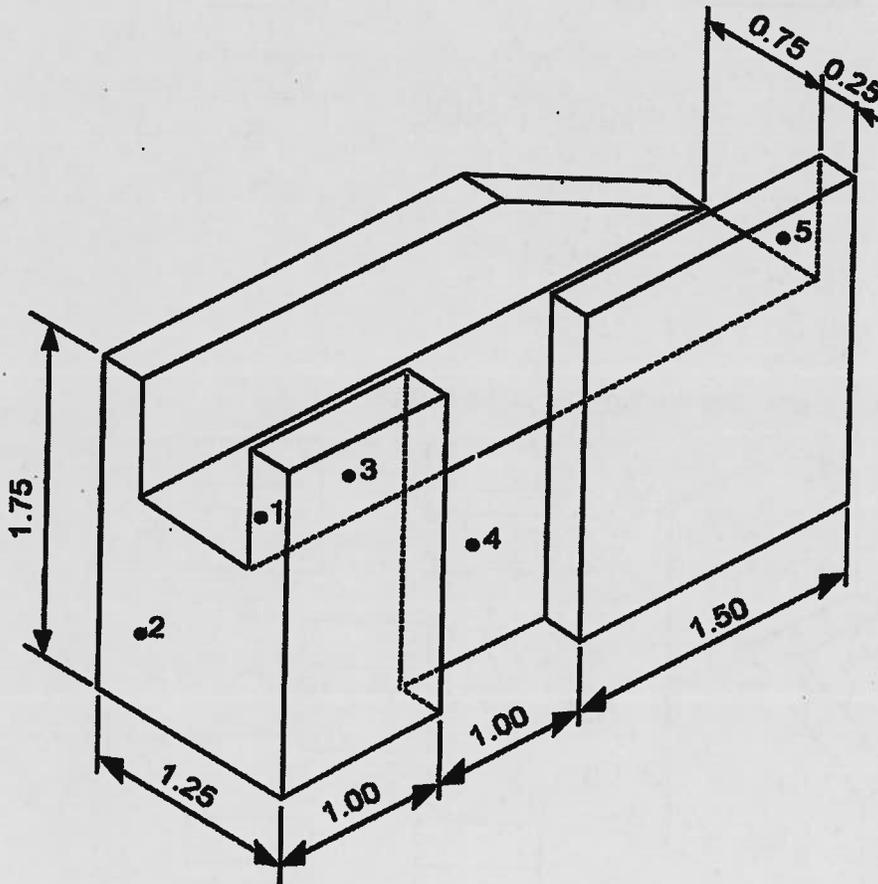
EXAMPLE: Dot #1 =

a) 1.00

b) 1.25

c) 2.00

d) 2.50   ● *the correct answer* D (1.00 + 1.50 = 2.50)

15. Dot #2
a) 1.00
b) 2.00
c) 2.50
d) 3.50

16. Dot #3
a) 0.25
b) 0.50
c) 1.00
d) 1.25

17. Dot #5
a) 0.25
b) 0.75
c) 1.00
d) 1.75

Section 2 - Mathematical Reasoning & Measurement

18. Using the inch ruler below, what is the measurement indicated by the arrow?
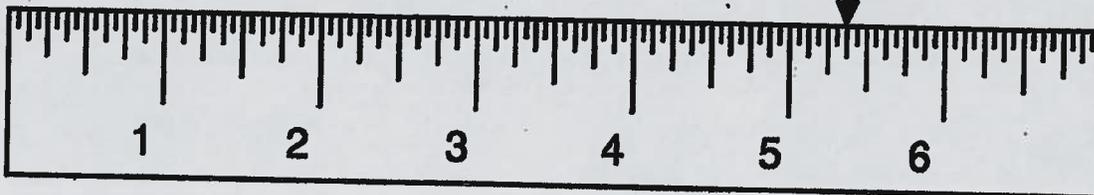
a) 5 1/8"
b) 5 ¼"
c) 5 5/16"
d) 5 3/8"

19. Using the inch ruler below, what is the measurement indicated by the arrow?

a) 3 ½"
b) 3 ¼"
c) 3 1/8"
d) 4 ½"
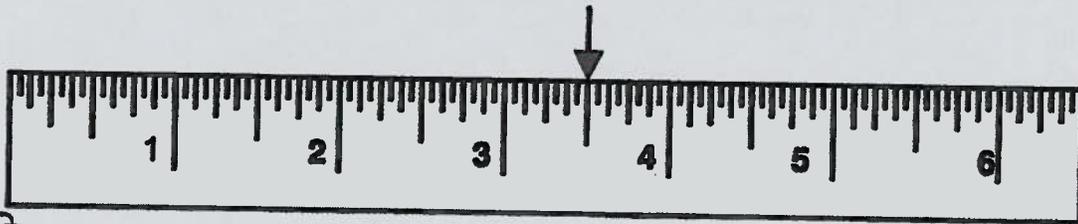
20. A steel square has two sides that form an angle of
a) 360°
b) 180°
c) 90°
d) 45°

21. A protractor is used for measuring
a) lines
b) angles
c) polygons
d) squares

22. If a delivery truck can hold 32 cartons, how many trucks would be needed to transport 180 cartons?
a) 3
b) 4
c) 5
d) 6

23. If a maintenance department had 24 workers, and 14 of those workers were assigned to the night shift, what fraction of the workers is working during the night shift?
a) 1/3
b) 5/14
c) 5/12
d) 7/12

24. Using the table below, put the following times in order from the <u>earliest time to the latest time</u>.

TIMES
1) 1:32 am
2) 12:26 pm
3) 3:21 pm
4) 4:40 am
5) 7:10 am
6) 10:12 pm

a) 1, 2, 3, 4, 5 and 6
b) 6, 3, 2, 5, 4 and 1
c) 1, 4, 5, 3, 6 and 2
d) 1, 4, 5, 2, 3 and 6

25. Arrange the following numbers from the <u>smallest to the largest</u>, the correct sequence is

a) 0.29, 0.6, 0.8, 0.073
b) 0.073, 0.29, 0.6, 0.8
c) 0.6, 0.8, 0.073, 0.29
d) 0.8, 0.6, 0.29, 0.073

26. Select the number that would continue the pattern or sequence shown below.
89 98 99 — 56 65 66 - ___ 32 33

a) 21
b) 23
c) 31
d) 67

27. "Tolerance" means the
a) length of a part
b) inside and outside diameter of the part
c) amount of material left over as scrap or to be recycled
d) acceptable amount of variation from a specific dimension.

28. Given the stock dimension of .248 with a tolerance of +.005/-.000, which of the following would be <u>Out of Specification</u>?
a) .246
b) .249
c) .252
d) .253

Continue to next page

29. What are the limits for the measurement shown below?

18.30 $\begin{array}{l} + 0.15 \\ - 0.45 \end{array}$
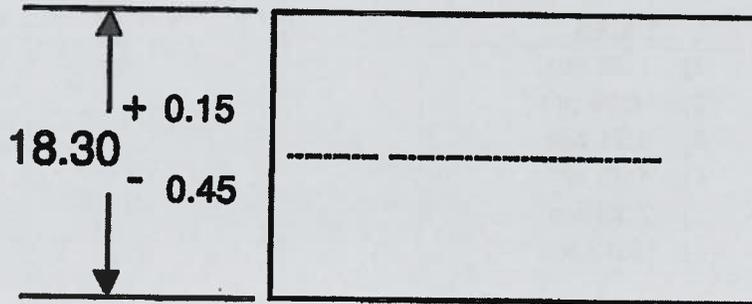
a) 0.15 and 0.45
b) 18.45 and 17.85
c) 18.90 and 17.90
d) 18.30 and 0.15

30. In the right triangle below, if "A" is 35 degrees, angle "B" is:

A

B
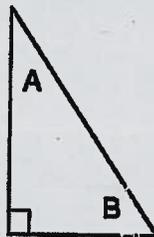
Hint: Must equal 180 degrees

a) 25 degrees
b) 45 degrees
c) 55 degrees
d) 65 degrees

31. How many cartons are on the skid below?
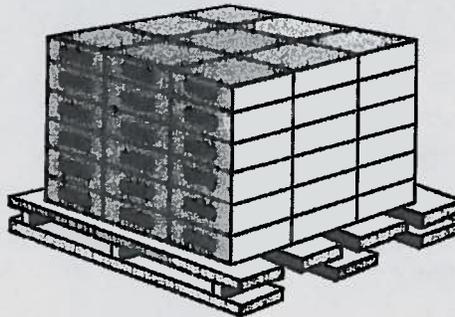
a) 36
b) 45
c) 54
d) 64

Refer to the following drawing for the next <u>two</u> questions
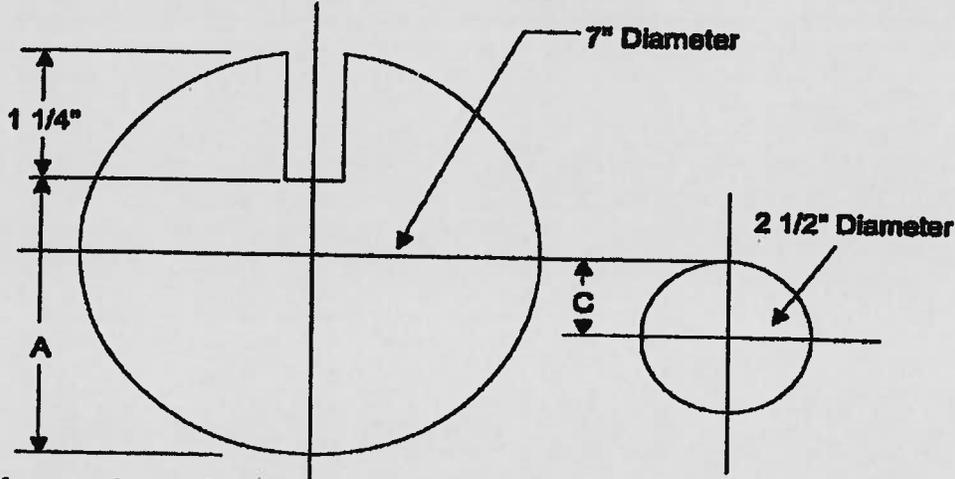
32. What is the distance (A) from the bottom of the indentation to the bottom of the part?

a) 5-¾"
b) 6"
c) 6-¼"
d) 6-½"

33. What is the vertical distance (C) between the center lines of the shafts?

a) 2-½"
b) 1-¼"
c) 1-½"
d) 1-¾"

Section 3 - Communications & Information

34. What is the first step in problem solving?

a) Collect data
b) Identify the problem
c) Perform corrective actions
d) Isolate the cause of the problem

35. Using a group of people to openly discuss an issue in free environment to solve a problem is called

a) arbitration
b) facilitation
c) consensus
d) brainstorming.

Continue to next page

Use the graph below and answer the next two questions.
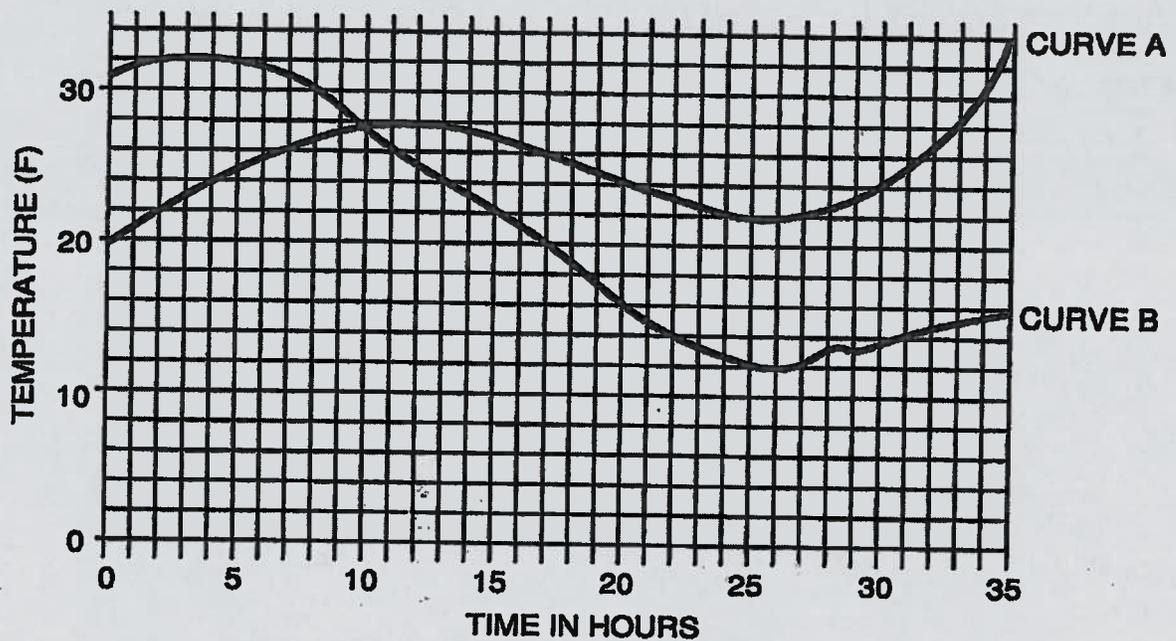
36. Between 11 and 26 hours, what is the change in temperature according to <u>Curve A</u> using the graph shown?
   a) 4°
   b) 6°
   c) 9°
   d) 15°

37. Using the graph, at which point in time (Hours) is the difference between Curves A and B equal to 6 degrees?
   a) 5 hours
   b) 15 hours
   c) 17 hours
   d) 32 hours

Use the graph below and answer the next <u>two</u> questions (60 parts is the goal):

Components Completed
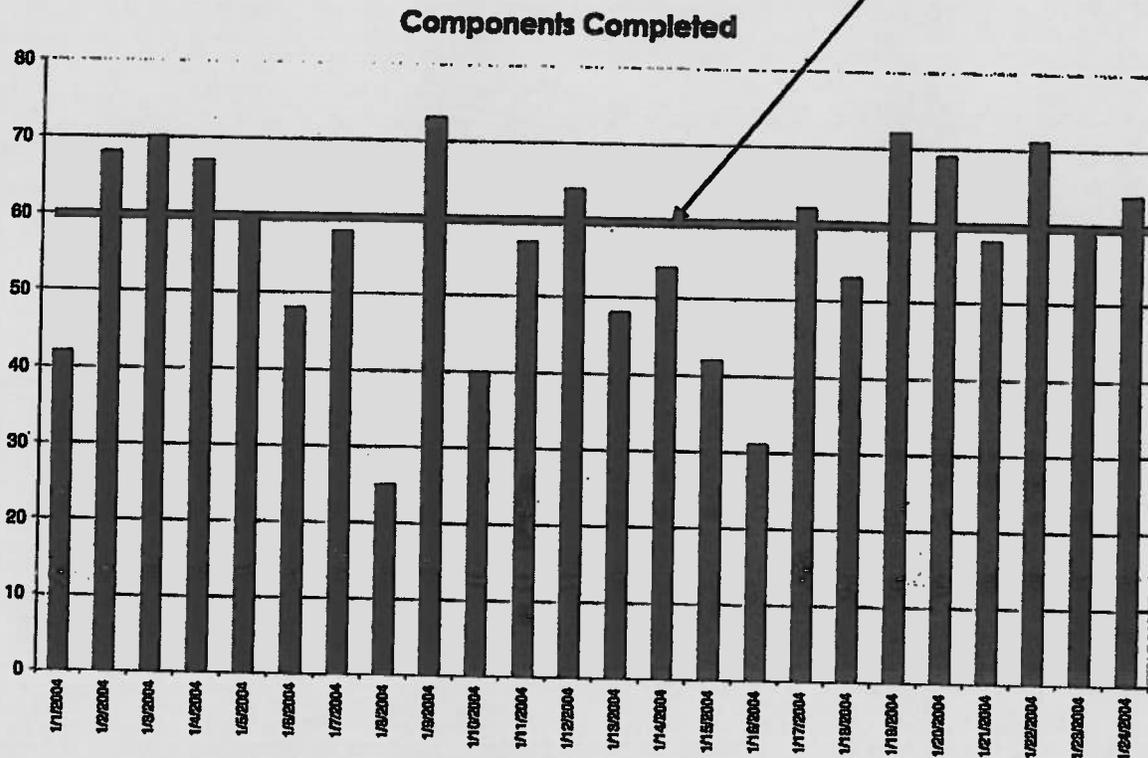
38.   If the production goal was 60 components per day, how many times was that goal met or exceeded over the course of the month?

a) 4
b) 9
c) 12
d) 13

39.   Using the graph, how many additional parts were completed on 1/23/2004 compared to those made on 1/10/2004?

a) 10
b) 20
c) 40
d) 60

Continue to next page

Using the Code Table below and the codes provided, answer the next **two** questions. The first number set is the *Customer Location*. The second number set is the *Account*. The last number set is the *Part Number* made by the operator.

CODE TABLE

Customer Location	Customer Number	Account Name	Account Number	Operator Name	Part Number
LaGrange	501	Tao Computers	765	Restin Piece	098
		Jones Metals	105	Barbara Wire	188
Sonoma Valley	68	Public Works	674	Miss. Demeanor	550
		Al's Auto	688	Max Million	551
Northwest Orlando	35	Shack's Tools	355	Marry Yew	886
		Blue's Washers	501	Justin Tyme	688
Capital Mall	53	Steel Makers	866	Burra Crat	016
		Lincoln Wireworks	8900	Pat Urhead	653

40. Using the Code Table, what is the meaning of Code **35 – 501 – 688**?
    a) Location: Northwest Orlando, Customer: Blue's Washers, and Operator: Justin Tyme
    b) Location: Northwest Orlando, Customer: Shack's Tools, and Operator: Justin Tyme
    c) Location: LaGrange, Customer: Shack's Tools, and Operator: Mary Yew
    d) Location: Capital Mall, Customer: Blue's Washers, and Operator: Pat Urhead

    (a is circled)

41. Using the Code Table, what is the meaning of Code: **68 – 688 – 551**?
    a) Location: Al's Auto, Customer: Max Million, and Operator: Restin Piece
    b) Location: Sonoma Valley, Customer: Al's Auto, and Operator: Miss Demeanor
    c) Location: Sonoma Valley, Customer: Public Works, and Operator: Miss Demeanor
    d) Location: Sonoma Valley, Customer: Al's Auto, and Operator: Max Million

    (d is circled)

Study the Time Sheet below and answer the following two questions.

TIME SHEET: Name: Pat Urhead From: April 7 To: April 13 Position: Press Operator

Day/Date		IN	OUT	IN	OUT	Daily Total
Monday	4/7	7:00	11:00	12:00	4:00	8
Tuesday	4/8	7:30	11:00	12:00	4:00	7 ½
Wednesday	4/9	8:00	11:00	12:00	6:00	9
Thursday	4/10	6:30	11:30	12:45	4:00	8 ¼
Friday	4/11					Off
Saturday	4/12	7:00	12:00	1:45	4:30	6 ¾
Sunday	4/13					Off
					Total Time	

42.   How much time did Pat Urhead take off for lunch during the pay period?
a) 4 ½ hours
b) 5 hours
c) 6 hours
d) 6 ½ hours

43.   What was the total time worked for the pay period?
a) 39.25 hours
b) 39.50 hours
c) 40.00 hours
d) 45.50 hours

Using the Billing Code Table below and the information provided, answer the next four questions.

BILLING CODE TABLE

Type of Business	Code	Amount of Invoice	Code	Invoice Date	Code
Medical	35	Less Than $500	L05	June 2010	688
Appliance	86	$500 to $999	501	September 2008	988
Automotive	65	$1000 to 4999	105	June 2009	689
Computer	53	$5000 to $10,000	510	August 2009	889
Construction	68	More Than $10,000	M10	March 2009	389

Information Statement: On June 8, 2009, Johnson Hospital Supply Manufacturer's was sent an invoice of $7,500 for materials provided.

44.   The Amount of Invoice Code is:
a) M10
b) 510
c) L05
d) 689

45.   The Type of Business Code is:
a) 35
b) 53
c) 65
d) 68

Information Statement: Jordan's Commercial Warehouse Builders received an invoice for $352.80 on March 16, 2009 for parts ordered.

46.   The Type of Business Code is:
a) 35
b) 65
c) 68
d) 86

47.   The Invoice Date Code is:
a) 389
b) 688
c) 689
d) 889

Using the Service Code Table below and the information provided, answer the next two questions.

SERVICE CODE TABLE

Equipment Type	Code	Service Contract	Code	Type of Problem	Code
Copy Machine	CM	1 Year Parts	A2	Paper Jam	04
Telecommunications	TS	1 Year Service	A1	Worn Part	20
FAX Machine	FM	3 Year Parts	B2	Circuit Burnout	24
Computer System	CS	3 Years Service	B1	Unusual Noise	70
Printer	PR	3 Year Parts & Service	B3	Uncertain	10

Information: The control room copier has a recurring paper jam and has a three-year parts contract.

48.   The Equipment & Service Contract Codes are:
a) Equipment Type Code: TS, Service Contract Code: A1
b) Equipment Type Code: CM, Service Contract Code: B2
c) Equipment Type Code: CS, Service Contract Code: B2
d) Equipment Type Code: CM, Service Contract Code: B3

Information: The in-plant telephone system under a one-year service contract has a static problem when in use.

49.   The Problem & Equipment Codes are:
a) Problem Code: 70, Equipment Code: CS
b) Problem Code: 10, Equipment Code: CS
c) Problem Code: 20, Equipment Code: CM
d) Problem Code: 70, Equipment Code: TS

Section 4 - Industry Understanding & Behaviors

50. Who is responsible for quality?
- a) The operator & setup person
- b) The supervisor or foreman
- c) Quality control & assurance personnel
- **(d) All of the above**

51. Which statement best represents the safety behavior for minimizing accidents?
- a) Blame accidents on others
- b) "Accidents happen"
- **(c) Follow standard operating procedures and use safety devices**
- d) Accident prevention is the responsibility of the safety department

52. To lift or carry a heavy object properly means
- **(a) using arm and leg muscles, not your back**
- b) using your back and arm strength
- c) bending over using only your back muscles
- d) placing your feet far apart and keeping your head up.

53. Friction is the resistance to motion of two moving objects that touch. What is the main cause of friction?
- **(a) Excessive heat**
- b) Cold surfaces
- c) Rough surfaces that are in contact with each other
- d) Different materials coming in contact with each other

54. The main purpose of lubrication is to
- a) allow moving parts to roll rather than slide
- b) eliminate rust, corrosion and grim
- **(c) reduce friction and excessive wear**
- d) control water or moisture content.

55. A metal is termed "ferrous" if it contains a substantial amount of
- a) nickel
- b) copper
- **(c) iron**
- d) tin.

56. Scheduled cleaning, lubrication, adjustment, inspection and repair of equipment are important elements of
a) operating procedures
b) emergency procedures
c) preventive maintenance
d) general housekeeping and cleaning.

57. If an operator is about to take a break and is only leaving the machine for a brief time, the operator should
a) get approval from the supervisor and then turn off equipment or stop the process
b) remove any stock which extends beyond the machine to ensure the safety of others
c) alert co-workers and set the machine in jog mode or at slow speed until you return
d) set the equipment in "automatic" and check back every few minutes.

58. As an operator, what is the first thing you should do if you see or hear anything unusual while running your machine?
a) Continue running, but stop if the problem gets worse.
b) Stop the machine for a few minutes and then restart
c) Stop the machine immediately and notify the supervisor
d) Ignore the problem for the time being and report it to the supervisor at break.

59. Your machine is down for a minor repair and you have time to relax for a few minutes. Another production worker asks if you could please do some work to help him catch up. You tell the production worker that
a) you're sorry, but he needs to pull his own weight
b) you will help, but tell your supervisor that the worker is inferior
c) you really need to relax a bit, and to ask someone else
d) you will help, and try to suggest ways to use his time more efficiently.

60. Which of the following statements is a simple guideline to having successful teamwork in the workplace?
a) Agree with your co-workers on all issues.
b) Stand firm on your ideas even when they conflict with others.
c) Communicate with co-workers and be prepared to do your share of the work.
d) Wait to be asked before you share your ideas at group meetings or with others.

THE END!

Test Version A

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