

Section 1 - Mechanical & Spatial Reasoning

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.

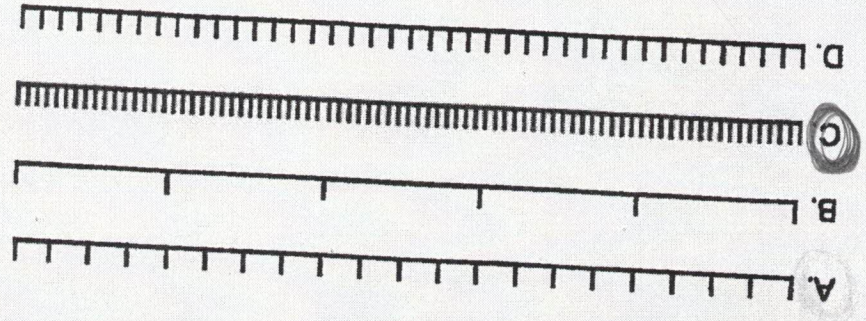
PMA Occupational Aptitude & Knowledge Assessment

1. How many **sets** of four circles are there in the group below?

○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○
○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○
○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○
○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○

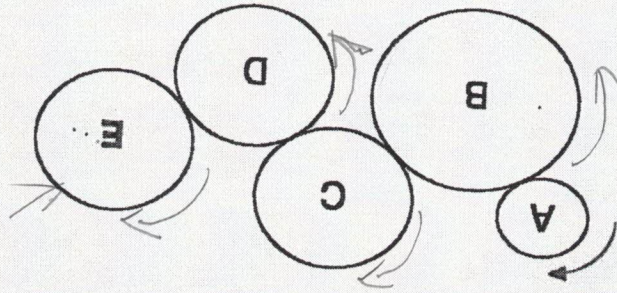
- a). 4
- b) 11
- c) 12
- d) 16

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



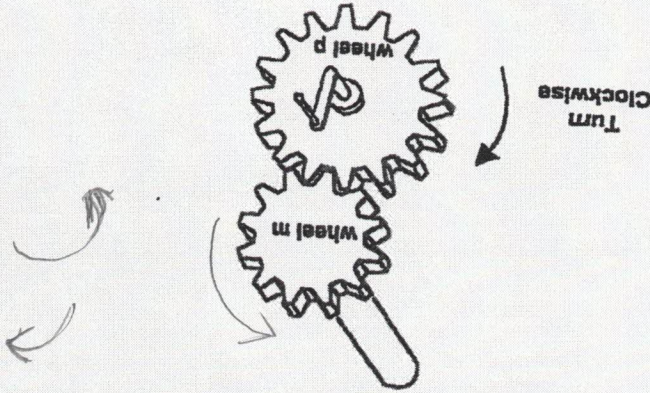
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- a) clockwise
- b) counterclockwise
- c) not affected
- d) stationary



4. The rotation of the gear labeled E in the figure below will be

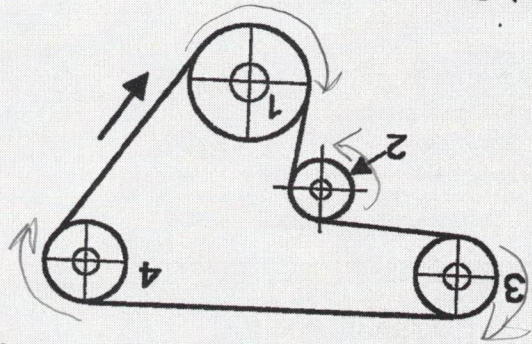
- a) If you turn M clockwise using the handle, wheel P will turn clockwise.
- b) It will take the same time for one tooth on P and M to make a full turn.
- c) It will take less time for a P tooth to make a full turn than a tooth on M.
- d) It will take more time for a P tooth to make a full turn than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



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

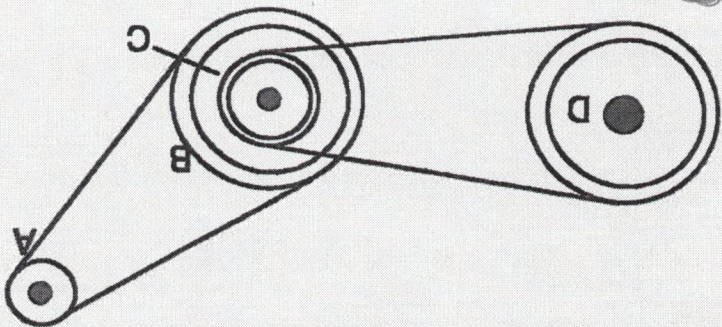
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- a) 2 & 4
- b) 2 & 3
- c) 3 & 4
- d) 1 & 2



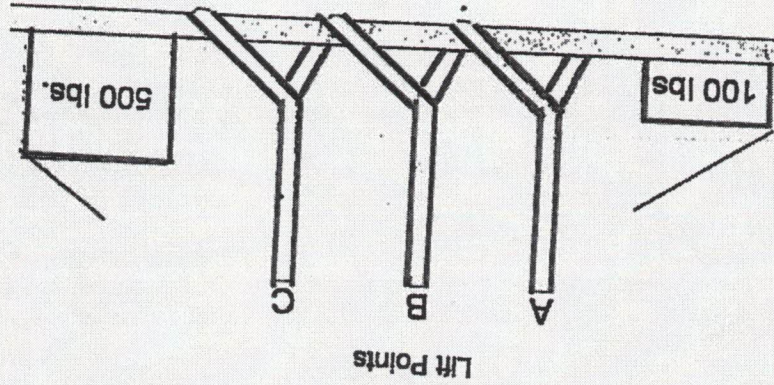
6. Which of the following pulleys will turn in the same direction as pulley #1?

- a) Pulley A
- b) Pulley B
- c) Pulley C
- d) Pulley D



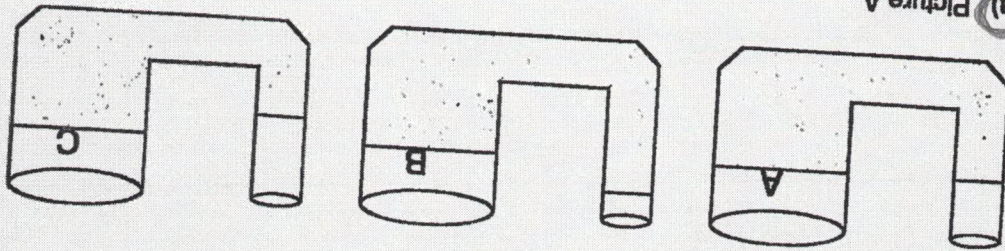
5. In the arrangement of pulleys shown below, which pulley will turn faster?

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



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?

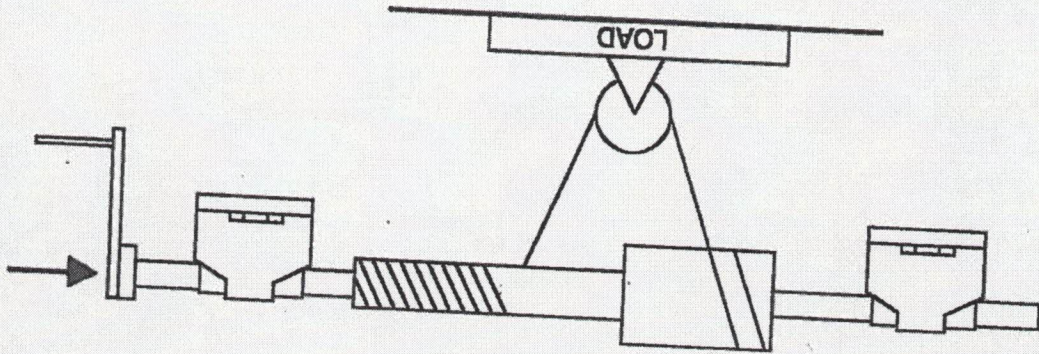
- a) Picture A
- b) Picture B
- c) Picture C
- d) None of the above



7. Which picture below shows the correct fluid level in the small tube after water has been added?

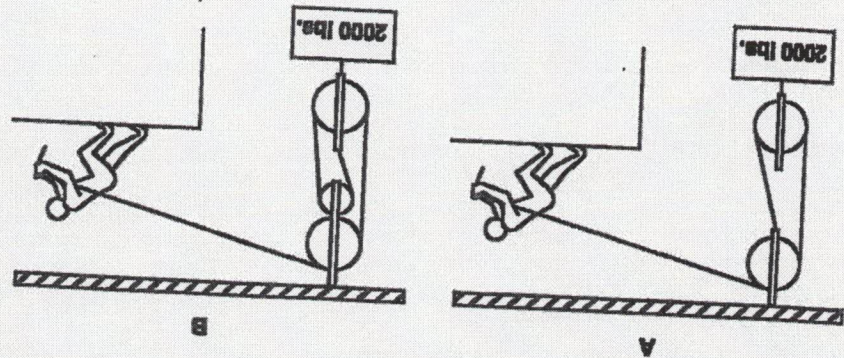
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- a) the load will not raise
- b) cannot be determined
- c) clockwise
- d) counterclockwise



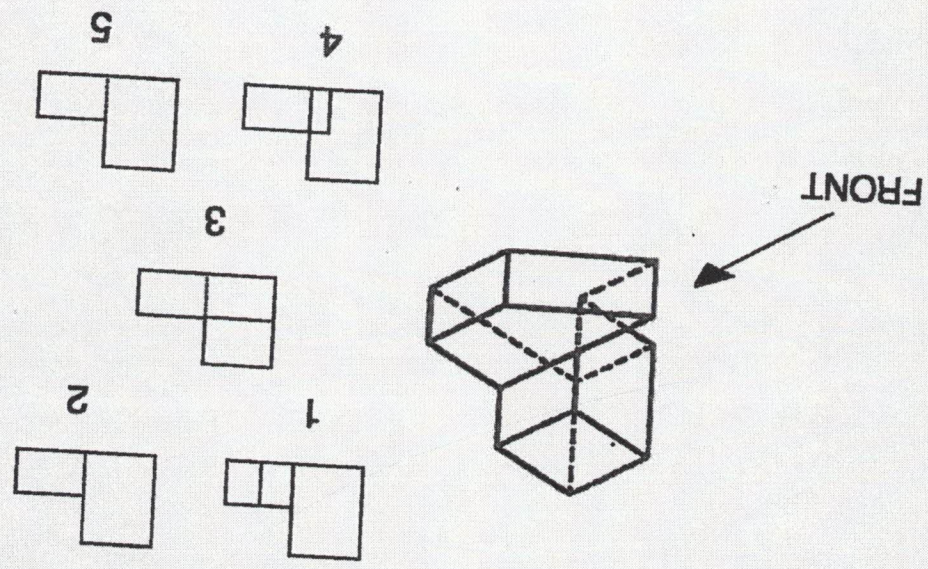
10. Looking at the winch in the direction of the arrow, which way will the crank have to be turned to raise the load?

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



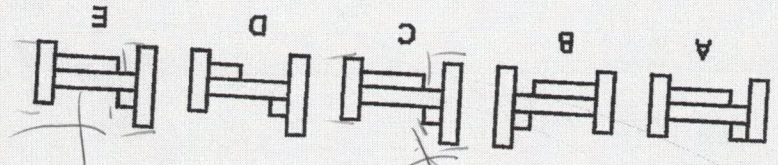
9. In the drawings below, which person will use less force to raise the load to the same height?

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



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

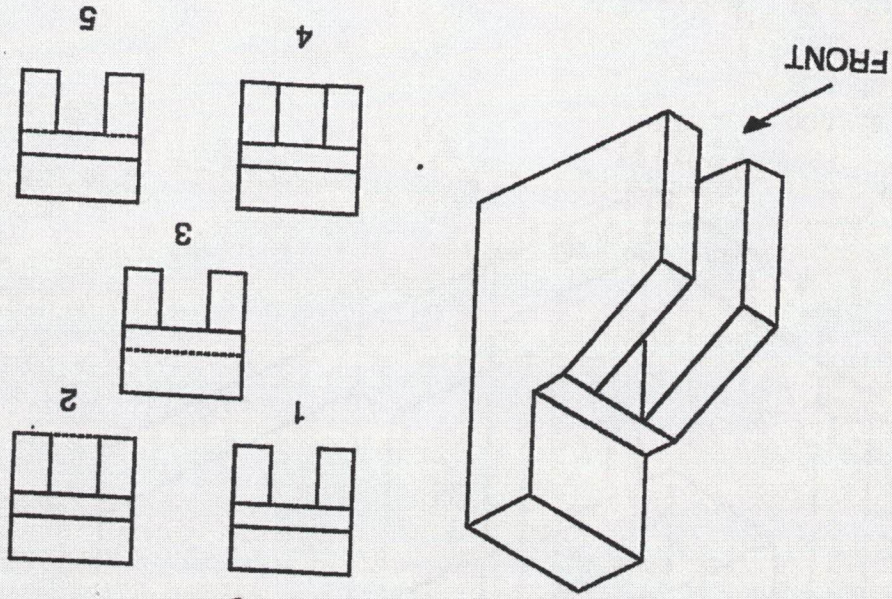
- a) A&D
- b) B&E
- c) C&E
- d) E&A



11. Which two images are identical?

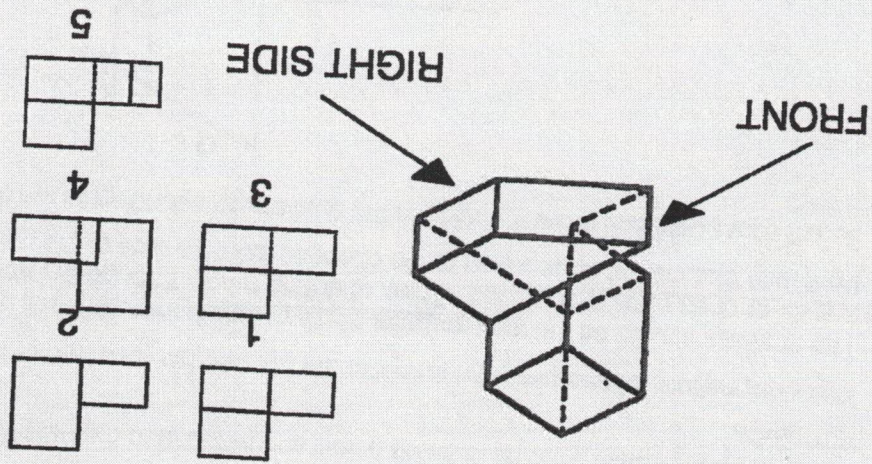
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- a) 1
- b) 3
- c) 4
- d) 5

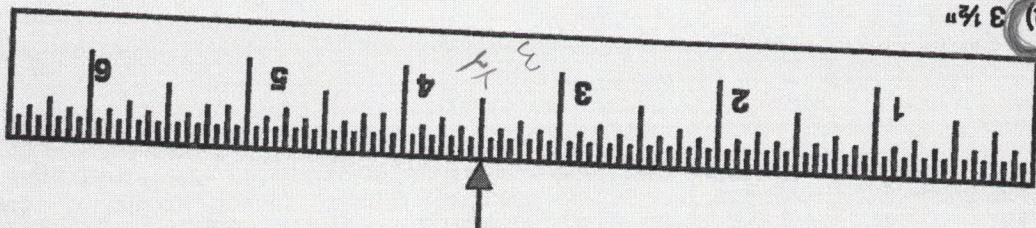
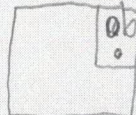



14. Which of the following represents the top view of the figure?

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



13. Which of the following represents the view from the right side of the figure?

19. Using the inch ruler below, what is the measurement indicated by the arrow?
- 
- a) $3 \frac{1}{2}$ "
 b) $3 \frac{3}{4}$ "
 c) $3 \frac{1}{8}$ "
 d) $4 \frac{1}{2}$ "
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?
- 32 = 180 / 32 = 5.625
- 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?
- $\frac{14}{24} = \frac{7}{12}$
- a) $\frac{1}{3}$
 b) $\frac{5}{14}$
 c) $\frac{5}{12}$
 d) $\frac{7}{12}$

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28. Given the stock dimension of .248 with a tolerance of $+.005/-0.000$, which of the following would be Out of Specification?
- a) .246 ✓
 - b) .249 ✓
 - c) .252 ✓
 - d) .253 ✓

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.

26. Select the number that would continue the pattern or sequence shown below.
- 89 98 99 - 56 65 66 - 23 32 33
- $+9+1$ $+9+1$
- a) 21
 - b) 23 ✓
 - c) 31
 - d) 67

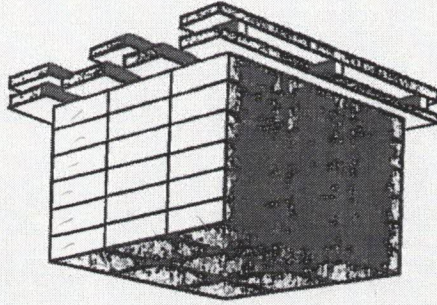
25. Arrange the following numbers from the smallest to the largest, the correct sequence is
- a) 0.29, 0.6, 0.8, 0.073
 - b) 0.073, 0.29, 0.6, 0.8 ✓
 - c) 0.6, 0.8, 0.073, 0.29
 - d) 0.8, 0.6, 0.29, 0.073

- 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 ✓

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

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) 36
- b) 45
- c) 54
- d) 64



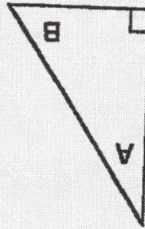
$6 \times 3 = 18$
 $18 \times 3 = 54$

$24 \times 2 = 48$
 $48 + 6 = 54$

31. How many cartons are on the skid below?

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

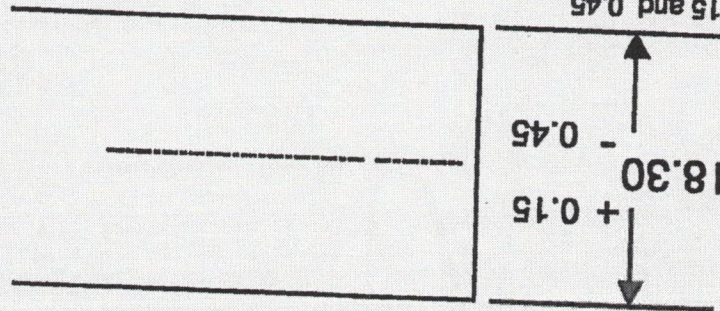
Hint: Must equal 180 degrees



$$\begin{array}{r} 125 \\ + 90 \\ \hline 215 \end{array} \quad \begin{array}{r} 125 \\ - 125 \\ \hline 0 \end{array}$$

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

- a) 0.15 and 0.45
- b) 18.45 and 17.85
- c) 18.90 and 17.90
- d) 18.30 and 0.15



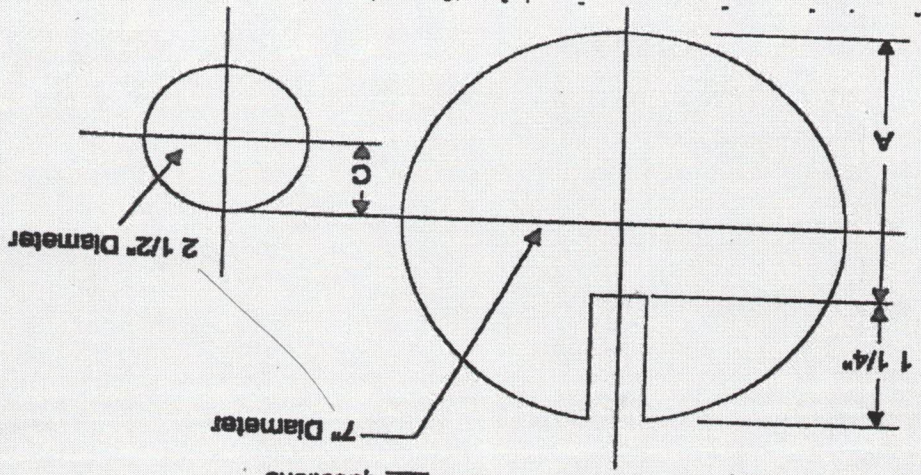
29. What are the limits for the measurement shown below?

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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.
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

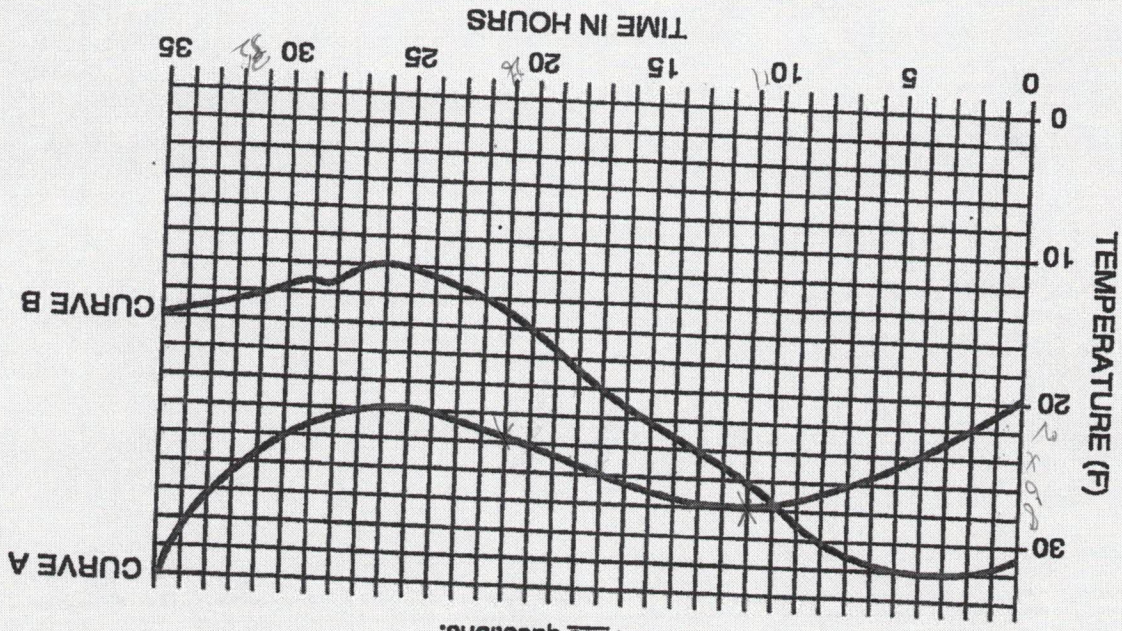
Section 3 - Communications & Information

33. What is the vertical distance (C) between the center lines of the shafts?
- a) 2-1/2"
 - b) 1-1/4"
 - c) 1-1/2"
 - d) 1-3/4"
32. What is the distance (A) from the bottom of the indentation to the bottom of the part?
- a) 5-3/4"
 - b) 6"
 - c) 6-1/4"
 - d) 6-1/2"



Refer to the following drawing for the next two questions

36. Between 11 and 26 hours, what is the change in temperature according to Curve A?
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 two questions.

Continue to next page

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

60
-40

20



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

Components Completed

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

501	LaGrange	Tao Computers	765	Restin Piece	098
68	Sonoma Valley	Jones Metals	105	Barbara Wire	188
		Public Works	674	Miss. Demeanor	550
35	Northwest Orlando	Al's Auto	688	Max Million	551
		Shack's Tools	355	Mary Yew	886
53	Capital Mall	Blue's Washers	501	Justin Tyme	688
		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
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

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45. The Type of Business Code is:
 a) 35
 b) 53
 c) 65
 d) 68
44. The Amount of Invoice Code is:
 a) M10
 b) 510
 c) L05
 d) 889

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

Type of Business Code	Amount of Invoice Code	Invoice Date	Code
Medical	Less Than \$500	June 2010	688
Appliance	\$500 to \$999	September 2008	988
Automotive	\$1000 to 4999	June 2009	689
Computer	\$5000 to \$10,000	August 2009	889
Construction	More Than \$10,000	March 2009	389

BILLING CODE TABLE

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

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
42. How much time did Pat Urthead take off for lunch during the pay period?
 a) 4 1/2 hours
 b) 5 hours
 c) 6 hours
 d) 6 1/2 hours

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 1/2
Wednesday 4/9	8:00	11:00	12:00	6:00	9
Thursday 4/10	6:30	11:30	12:45	4:00	8 1/4
Friday 4/11	7:00	11:30	12:45	4:30	6 3/4
Saturday 4/12					Off
Sunday 4/13					Off
Daily Total					

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

Handwritten notes: 4-15, 12-15, 15-5

Handwritten calculations: 39.50

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) 88

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
Telecommunications	TS	1 Year Service	A1
FAX Machine	FM	3 Year Parts	B2
Computer System	CS	3 Years Service	B1
Printer	PR	3 Year Parts & Service	B3
			Uncertain
			04
			20
			24
			70
			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 grime
 - 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.

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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!