



Name: _____

Date: _____

Hour: _____

ON THE JOB MATHEMATICS
Basic Math Skills

Directions: Read and answer each of the problems.

Solve the following problems; express all answers in simplest form; label answers using proper units of measure.

$$\begin{array}{r}
 1) \quad 48' \\
 26' \\
 9' \\
 32' \\
 \hline
 +12'
 \end{array}$$

$$\begin{array}{r}
 2) \quad 302 \text{ in}^2 \\
 461 \text{ in}^2 \\
 1076 \text{ in}^2 \\
 944 \text{ in}^2 \\
 \hline
 + 1287 \text{ in}^2
 \end{array}$$

$$\begin{array}{r}
 3) \quad 160'' \\
 \hline
 - 27''
 \end{array}$$

$$\begin{array}{r}
 4) \quad 4071 \text{ ft}^2 \\
 \hline
 - 398 \text{ ft}^2
 \end{array}$$

$$\begin{array}{r}
 5) \quad 452 \text{ Yd.} \\
 \hline
 \times 142 \text{ Yd.}
 \end{array}$$

$$\begin{array}{r}
 6) \quad 1406' \\
 \hline
 \times 68'
 \end{array}$$

$$7) \quad 1512'' \div 6 =$$

$$8) \quad 25848 \div 72 =$$

Express problems 9-13 in inches only; simplify all fractions; label answers using proper units of measure.

$$9) \quad 2' - 7'' = \underline{\hspace{2cm}}$$

$$10) \quad 12' - 11'' = \underline{\hspace{2cm}}$$

$$11) \quad 14' - 9'' = \underline{\hspace{2cm}}$$

$$12) \quad 7' - 4 \frac{1}{2}'' = \underline{\hspace{2cm}}$$

$$13) \quad 22' - 4 \frac{5}{8}'' = \underline{\hspace{2cm}}$$

Express problems 14-18 in feet and inches; simplify all fractions; label answers using proper units of measure.

$$14) \quad 29'' = \underline{\hspace{2cm}}$$

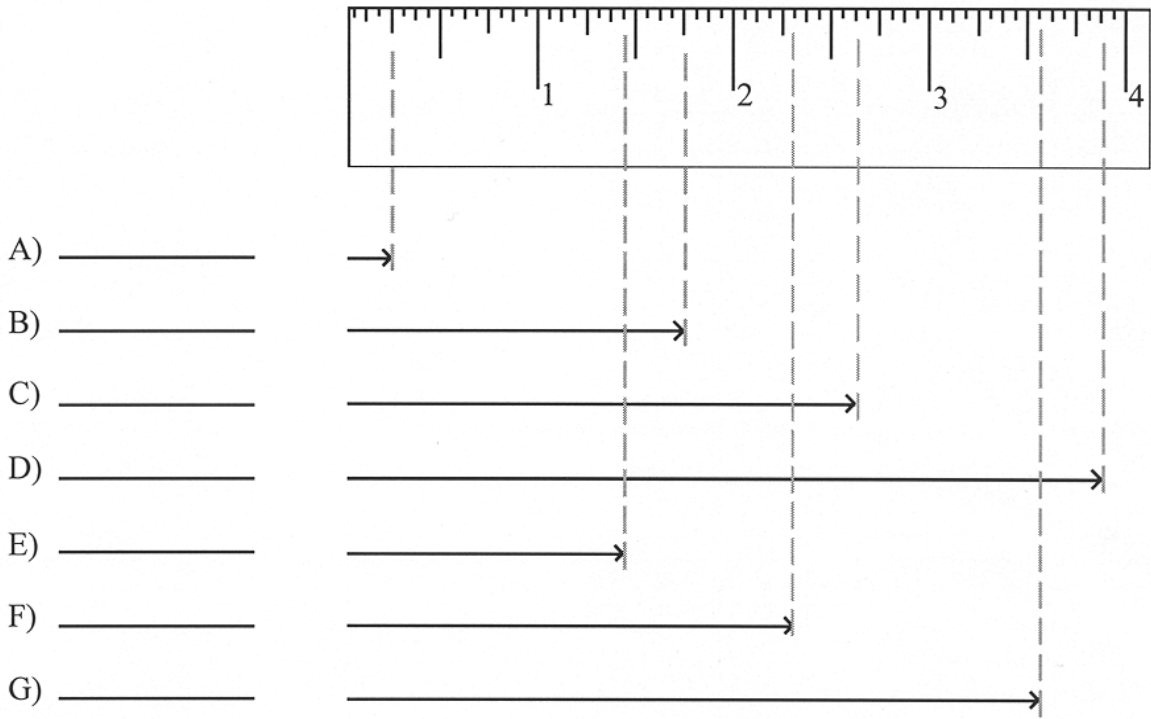
$$15) \quad 147'' = \underline{\hspace{2cm}}$$

$$16) \quad 421 \frac{1}{2}'' = \underline{\hspace{2cm}}$$

$$17) \quad 78 \frac{3}{4}'' = \underline{\hspace{2cm}}$$

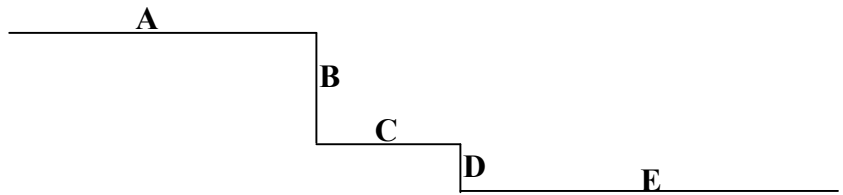
$$18) \quad 169 \frac{5}{8}'' = \underline{\hspace{2cm}}$$

19) Give the rule reading for each of the lettered dimensions A-G shown on ruler below.



20) Measure lines A, B, C, D and E to the nearest 1/16th of an inch; find the total length for all lines.

- A) _____
- B) _____
- C) _____
- D) _____
- E) _____



F) Total Inches for all lines above = _____

21) In planning a remodeling job Sam found the cost of the material as follows: Lumber, \$476; masonry \$143; hardware, \$73 and paint \$69. Find the total cost of materials.



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- 22) While working on the remodeling job, a crew of six worked 17, 26, 21, 16, 24, 25 hours. What is the total number of hours it took to complete the job?

Total: _____

- 23) The contractor had \$1472 dollars in his account after paying for the materials on the remodel job. He paid a bill for utilities of \$147. How much money does he have left in his account?

Total: _____

- 24) While working on the remodeling job, the carpenter needs to cut three boards of different widths from one large board. If the pieces are $1 \frac{5}{8}$ " , $3 \frac{15}{16}$ " and $4 \frac{1}{4}$ " and he needs to allow $\frac{1}{8}$ " waste for each saw cut, determine how wide of a board he will need to use. (Assume 2 cuts are made)

Total: _____

- 25) Later the carpenter needs to cut several more pieces from a board width. He will allow $\frac{1}{8}$ " of waste for each saw cut. The pieces measure as follows: $1 \frac{1}{4}$ " , $2 \frac{1}{16}$ " , $3 \frac{1}{2}$ " . How much of the boards' width will he have used? (Assume 3 cuts are made)

Total: _____

- 26) The total thickness of 4 pieces of plywood of these dimensions $\frac{1}{16}$ " , $\frac{5}{16}$ " $\frac{7}{8}$ " and $\frac{1}{4}$ " are?

Total: _____

- 27) One of the boards the carpenter wanted to use had a rough edge. The board was $3 \frac{5}{8}$ " wide and he took off $\frac{1}{8}$ " with a power plane. How wide was the board when he finished planning it?

Total: _____

Nails are measured in penny or "d" units. A 2d nail is 1 inch long. Lengths of nails are found on the following nail chart. Use this chart to solve problems 28 and 29.

Penny Size	Length in Inches	Wire Gauge		
		Common Nails	Box Nails	Finish Nails
2d	1	15	16	17
3d	$1 \frac{1}{4}$	14	15	16
4d	$1 \frac{1}{2}$	12	14	15
5d	$1 \frac{3}{4}$	12	13	14
6d	2	11	12	13
7d	$2 \frac{1}{4}$	--	12	12
8d	$2 \frac{1}{2}$	10	11	12
10d	3	9	11	11
12d	$3 \frac{1}{4}$	9	--	11
16d	$3 \frac{1}{2}$	8	--	11
20d	4	6	--	10

- 28) How long is an 8d nail? _____
- 29) If the carpenter asked you to get a box of 6d nails, how long would the nails be? _____



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30) In looking over the blueprint of a job, you see that $\frac{1}{4}$ " represents 1 foot. If the garage length is 28 feet, and the width is 16 feet, what would be the dimensions on the blueprint in inches?

Total: _____

31) If a line is drawn so that $\frac{1}{4}$ " represents 1', how many feet are represented by a line 4" long?

Total: _____

32) If $\frac{1}{4}$ " represents 1' on a drawing, how many feet are represented by $8 \frac{3}{8}$ "?

Total: _____

33) When $\frac{1}{8}$ " represents 1' on a drawing, how many feet are represented by $7 \frac{3}{4}$ "?

Total: _____

34) How many $\frac{1}{8}$ ths of an inch are there in $\frac{3}{8}$ "? _____

35) How many $\frac{1}{8}$ ths of an inch are there in $\frac{7}{8}$ "? _____

36) How many $\frac{1}{16}$ ths of an inch are there in $\frac{1}{4}$ "? _____

37) How many $\frac{1}{16}$ ths of an inch are there in $\frac{7}{8}$ "? _____

38) How many $\frac{1}{16}$ ths of an inch equal $\frac{3}{8}$ "? _____

39) How many $\frac{1}{16}$ ths of an inch equal $\frac{3}{4}$ "? _____

40) What is the length of a piece of stock $\frac{1}{16}$ -inch longer than $\frac{3}{4}$ "? _____

- 41) What is the length of a piece of stock $1/4$ -inch longer than $3/8$ "? _____
- 42) What is the length of a piece of stock $1/16$ -inch longer than $1 \ 5/8$ "? _____

For problems 43-55 express all lengths in simplified fraction form-be sure to label units of measure.

43) $1/8" + 3/8" =$

51) $1 \ 3/4" - 7/8" =$

44) $3/4" + 3/8" =$

52) $4 \ 3/8" - 9/16" =$

45) $1/4$ gallon + $5/8$ gallon =

46) $3/16" + 9/16" =$

53) $1 \ 5/8" - 1 \ 7/16" + 3/4" =$

47) $5/16" + 3/4" =$

48) $1" - 5/16" =$

54) $4" + 3 \ 1/4" - 1 \ 7/16" =$

49) $5/8" - 1/4" =$

50) $1 \ 1/4" - 3/16" =$

55) $3 \ 5/16" + 5/8" - 13/16" =$

For problems 56-60 express the square inch areas rounded off to two decimal places - be sure to label units of measure.

56) $6" \times 10 \ 1/4" =$ _____

57) $1 \ 5/8" \times 2" =$ _____

58) $2 \ 3/4" \times 1/8" =$ _____

59) $3 \ 1/4" \times 5 \ 1/8" =$ _____



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60) $4 \frac{1}{8}'' \times 2 \frac{1}{4}'' =$ _____

For problems 61-75 express answers in feet and inches with fractions in simplest form -be sure to label units of measure.

61) $9 \frac{1}{2}'' \div 4 =$ _____

62) $6 \frac{3}{4}'' \div \frac{1}{2} =$ _____

63) $8 \frac{3}{4}'' \div 2 =$ _____

64) $3'' \times 2 \frac{1}{2}'' \div \frac{3}{4} =$ _____

65) $2' 2 \frac{1}{2}'' + 3' 7 \frac{3}{8}'' - 1' 4 \frac{1}{4}'' =$ _____

66) $6' 2 \frac{1}{8}'' - 3' 9/16'' + 4' 4 \frac{1}{8}'' =$ _____

67) $4' 7 \frac{1}{2}'' \times \frac{1}{4} =$ _____

68) $3' 5'' \times 4 \frac{1}{8}'' =$ _____

69) $3' 6 \frac{1}{2}'' \div 1 \frac{1}{4}'' =$ _____

70) What fractional part of a foot is 8 inches? _____

71) What fractional part of a foot is 4 inches? _____

72) Find $\frac{1}{2}$ of $8 \frac{3}{4}''$ inches. _____

73) Find $\frac{1}{4}$ of $2' 6''$ _____

74) Find $\frac{1}{2}$ of $4' 9 \frac{1}{2}"$ _____

75) If a piece of plywood has an inner core .375 inch thick and it is covered by two pieces, each .250 inch thick what is the total thickness? Be sure to label units of measure.

Total: _____

76)
$$\begin{array}{r} \$5,476.25 \\ - \$3,947.68 \\ \hline \end{array}$$

77)
$$\begin{array}{r} \$4.32 \\ - \$1.97 \\ \hline \end{array}$$

78) Subtract 56.47 from 81.36 = _____

79) Subtract .46 from .68 = _____

80) Subtract 2.34 feet from 5 feet = _____

81) A contractor's bank balance starts out at \$12,321.36. He then makes a deposit of \$1,567.72 and then pays out the following to his workers:

Carpenters	\$ 1,832.41
Bricklayers	\$ 1,406.96
Plasterers	\$ 733.50
Laborers	\$ 594.63
Painters	\$ 341.92

What is the net (final) balance of the contractor's bank balance? _____

For problems 82-85, round each answer to the nearest two places.

82) $47.9 \times 83.2 =$



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83) Divide 18 by .47 =

84) Divide 85.72 ÷ 2.7 =

85) Divide 76 pounds by .43 =

- 86) **Express the common fractions as decimal fractions in problems A thru C, and decimal fractions as common fractions to the nearest 16th of an inch in problems D thru H.**

A. $1/8 =$ _____

E. $2.4 =$ _____

B. $29/32 =$ _____

F. $0.78125 =$ _____

C. $5/8 =$ _____

G. $0.6875 =$ _____

D. $2.8 =$ _____

H. $0.53125 =$ _____

When solving problems 87-94 reduce feet and inch answers; simplify fractions; label units of measure.

87) Express 0.625 inch as 8ths of an inch. = _____

88) Express 0.28 inch to the nearest 16th of an inch. = _____

89) Express 1.46 inch to the nearest 4th of an inch. = _____

90) Express .47666 foot to the nearest inch. = _____

91) Express .13 foot to the nearest inch. = _____

92) Express 5.44 feet as feet and inches to the nearest inch. = _____

93) Express 12.62 feet as feet and inches to the nearest 16th of an inch. = _____

94) How many feet and inches, to the nearest 8th of an inch, are in 76.48 inches? _____



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95) A general contractor estimates the cost of a residential building to be \$95,870. If the excavating will cost 4%, the concrete work will cost 18%, and the carpeting will cost 5%, what is the total estimate for each of the following?

- A _____ Excavating
- B _____ Concrete Work
- C _____ Carpeting

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96) The estimated cost of a house is \$84,760. The contractor adds 9% for profit. What is the total amount of the bid?

Total: _____

97) The contractor is preparing a bid for a house. Use the following information to determine the contractor's total bid.

Sub Contractor bids:

- A _____ Plumbing \$5421.30 + 8%
- B _____ Masonry \$7326.47 + 12%
- C _____ Electrical \$2247.32 + 10%
- D _____ General Contractor \$72482.32
- E _____ Subtotal
- F _____ 13% of the total Subtotal cost -for profit.
- G _____ What is the contractors total bid?

98) Determine the simple interest and total amount for each of the following loans.

<u>Principal</u>	<u>Annual Rate of Interest</u>	<u>Time</u>	<u>Total Interest</u>	<u>Total Amount</u>
\$350	6%	3 years	A _____	B _____
\$3200.00	11%	5 years	C _____	D _____
\$5500.00	12%	2 years	E _____	F _____
\$25000.00	14%	3 months	G _____	H _____

99) A bank loans \$65,450.00 to a contractor at a rate of 11% per year. What is the yearly interest payment?

Total: _____

100) A contractor pays \$250 interest annually on a mortgage of \$3500. What is the rate of interest?

Total: _____

101) A lumberyard charges 12% annual interest on money owed to them after 30 days. How much interest does a contractor pay on a \$3,280 bill that is paid in 60 days?



Name:

Date:

Hour:

Total: _____