

## Section I — +/– Feet &amp; Inches

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1.  $17' 9'' + 12' 6'' =$

5.  $8' 4'' - 2' 9'' =$

2.  $8' 9'' + 11' 11'' =$

6.  $13' 8'' + 14' 6'' =$

3.  $13' 10'' - 8' 4'' =$

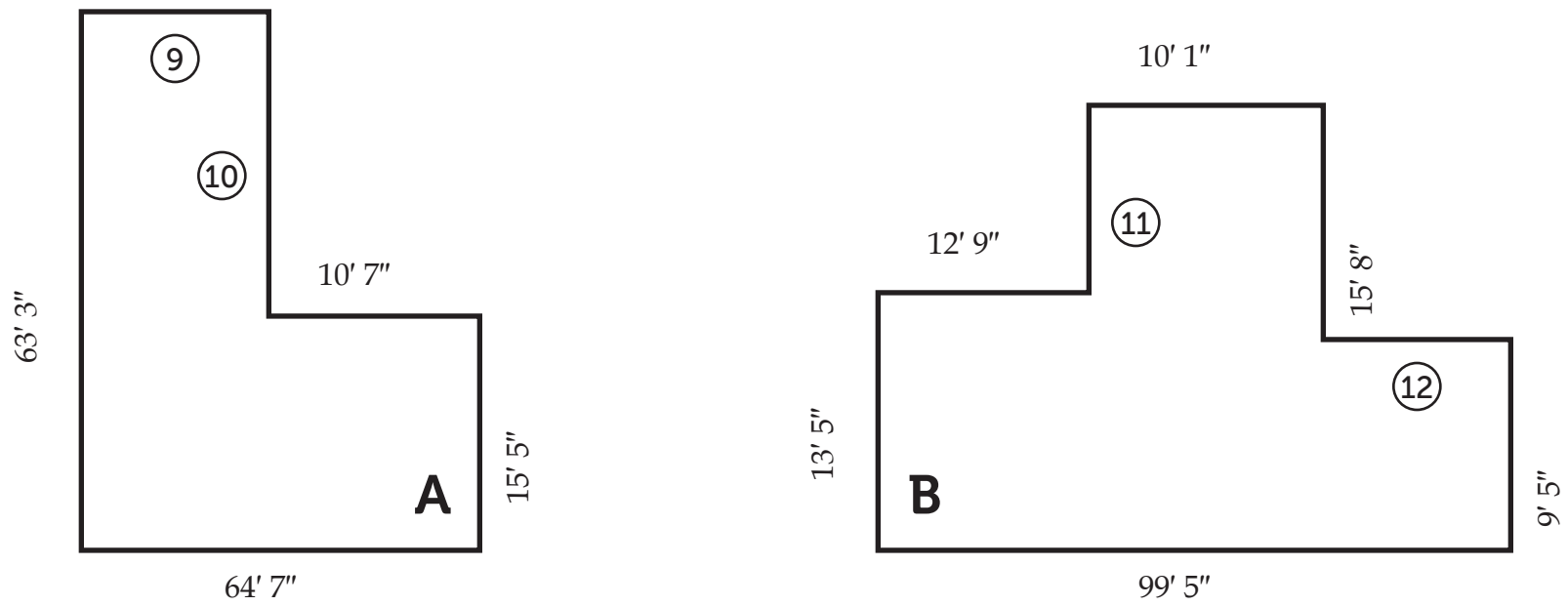
7.  $11' 2'' + 14' 10'' =$

4.  $16' 8'' + 14' 8'' =$

8.  $14' 3'' - 8' 6'' =$

Section II — Find the Missing Side & Perimeter

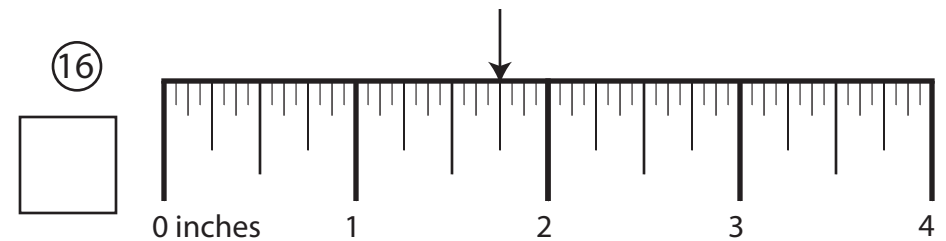
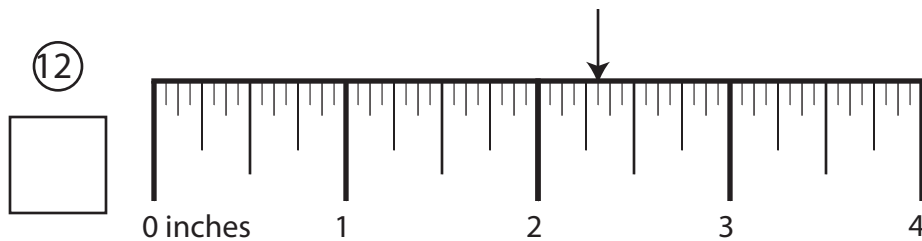
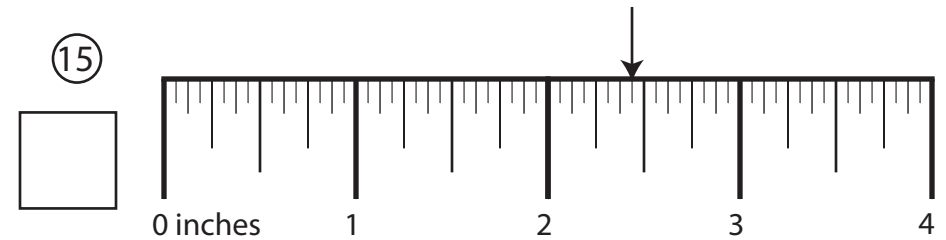
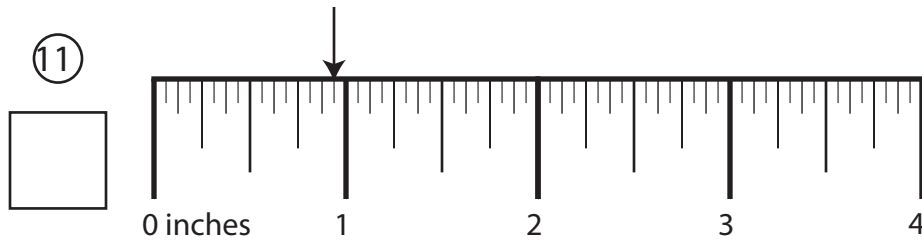
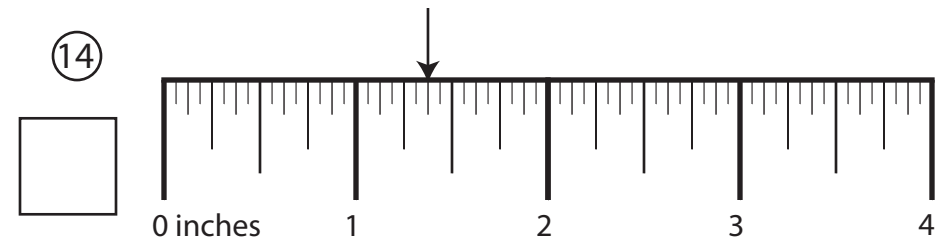
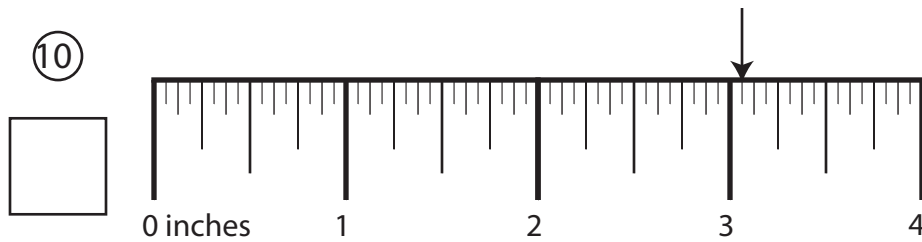
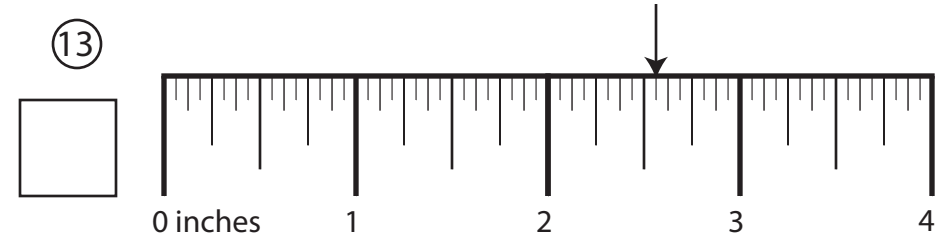
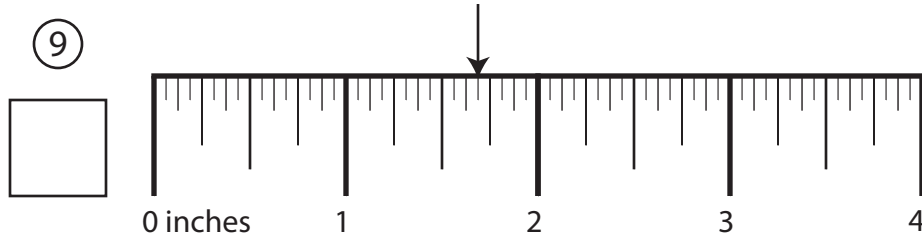
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Side	Length	Side	Length	Shape	Perimeter
9	_____	11	_____	A	13 _____
10	_____	12	_____	B	14 _____

## Section III — Ruler Measurements

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## Section IV — More/Less Than

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23. What is  $\frac{5}{16}$  more than  $5\frac{3}{16}$ ?      27. What is  $\frac{1}{8}$  less than  $3\frac{5}{16}$ ?

24. What is  $\frac{1}{4}$  more than  $5\frac{1}{4}$ ?      28. What is  $\frac{5}{16}$  less than  $3\frac{1}{2}$ ?

25. What is  $\frac{1}{2}$  more than  $4\frac{1}{2}$ ?      29. What is  $\frac{1}{4}$  less than  $3\frac{1}{8}$ ?

26. What is  $\frac{1}{2}$  less than  $5\frac{1}{4}$ ?      30. What is  $\frac{1}{4}$  more than  $1\frac{3}{8}$ ?

## Section V — Nail Penetration &amp; Screw Hole Bits

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*How far will a ...**What drill bit do you need to drill a ...*

[Remember, # or letter only, except 27/64, 14/32, 29/64]

31. 40 penny nail penetrate a  $\frac{1}{2}$ " green timber?

35. pilot hole for a 4 gauge screw?

32. 2 penny nail penetrate a  $1\frac{1}{2}$ " green rafter?

36. clearance hole for a 9 gauge screw?

33. 3 common gauge nail penetrate a  $3\frac{1}{2}$ " dry rafter?

37. clearance hole for a 9 gauge screw?

34. 8 penny nail penetrate a  $1\frac{1}{4}$ " green rafter?

38. clearance hole for a 3 gauge screw?

Section VI — **Math** Calculations**308**

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39. Room B's TSA, made of Fiber hardboard, if inside is 80°F and outside is 39°F?
40. Room A's Wall #4, made of Bitumen/felt layers, if inside is 79°F and outside is 65°F?
41. How many mmBTUs are generated by burning 454 pounds of Basswood?
42. How many pounds of CO<sub>2</sub> are released by burning 439 pounds of Hemlock?
43. How many mmBTUs are generated by running a CGa-4 for 1 hours?
44. Room B's Ceiling, made of Felt insulation, if inside is 68°F and outside is 21°F?
45. Room A's Wall #1, made of Hastelloy C, if inside is 72°F and outside is 16°F?
46. Room C's Wall #2, made of Fire-clay brick 500oC, if inside is 72°F and outside is 1°F?

## Section VI — Math Calculations

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47. Ethylene glycol cycle, 1159 (lb/hr) flowrate, outside is 44°F, inside 88°F?
51. Glycerine cycle, 1136 (lb/hr) flowrate, outside is 72°F, inside 60°F?
48. Room C's 4 Walls, made of Timber, birch, if inside is 60°F and outside is 18°F?
52. Ether cycle, 1394 (lb/hr) flowrate, outside is 52°F, inside 74°F?
49. Alcohol, propyl cycle, 697 (lb/hr) flowrate, outside is 78°F, inside 40°F?
53. Ammonia, 320°F cycle, 1000 (lb/hr) flowrate, outside is 63°F, inside 90°F?
50. How many pounds of CO<sub>2</sub> are released by burning butane for 10 weeks in a ET 199-C?
54. Calcium Chloride cycle, 934 (lb/hr) flowrate, outside is 90°F, inside 59°F?

## Section VII — Blueprint Calculations

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55. Shape D, Scale = 30, pipe job.

59. Shape G, Scale = 50, tile job.

56. Shape B, Scale = 8, wire job.

60. Shape R, Scale = 8, caulking job.

57. Shape D, Scale = 32, panel job.

61. Shape R, Scale = 30, pipe job.

58. Shape G, Scale = 36, molding job.

62. Shape N, Scale = 8, brick job.