Section I — +/− Feet & Inches

3 4 6

1. 10′ 3″ − 4′ 5″ =

5. 16′ 3″ − 10′ 4″ =

2. 18′ 11″ + 10′ 11″ =

6. 12′ 5″ + 15′ 7″ =

3. 15′ 9″ + 14′ 9″ =

7. 14′ 3″ + 13′ 1″ =

4. 12′ 10″ + 8′ 9″ =

8. 8′ 1″ − 11′ 9″ =

Section II — Find the Missing Side & Perimeter

Shape A:
- 9 (top side)
- 10
- 71' 4" (left side)
- 10' 5"
- 14' 7"
- 68' 10" (bottom)
- **A**

Shape B:
- 11' 1" (top)
- 17' 6"
- 11
- 8' 3"
- 12
- 11' 5" (left)
- 14' 10" (right)
- 75' 11" (bottom)
- **B**
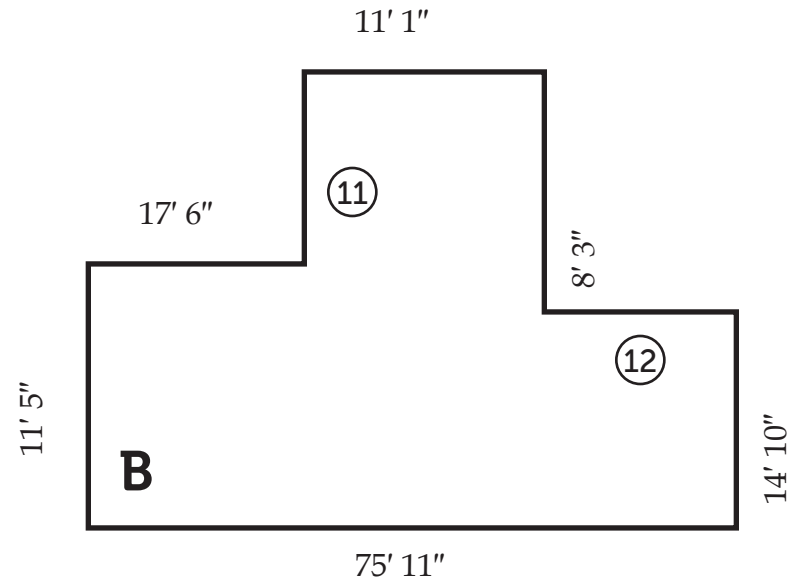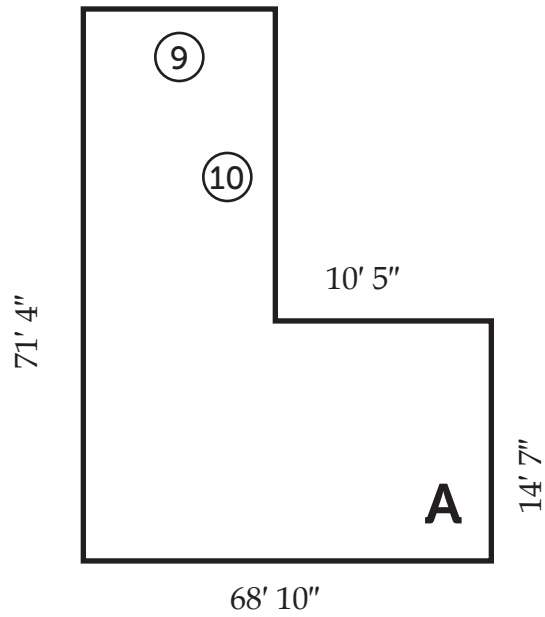
Side	Length	Side	Length	Shape	Perimeter
9		11		A	13
10		12		B	14

Section III — Ruler Measurements

346

⑨

0 inches   1   2   3   4

⑩

0 inches   1   2   3   4

⑪

0 inches   1   2   3   4

⑫

0 inches   1   2   3   4

⑬

0 inches   1   2   3   4

⑭

0 inches   1   2   3   4

⑮

0 inches   1   2   3   4

⑯

0 inches   1   2   3   4
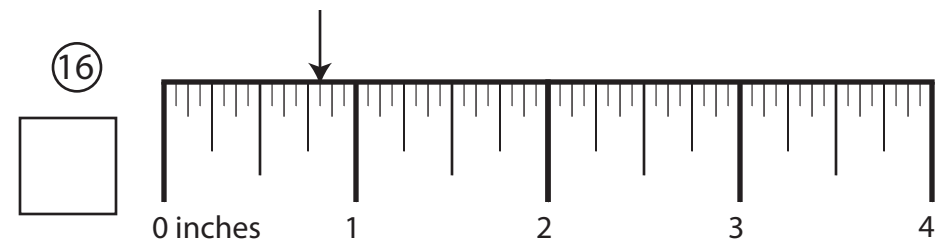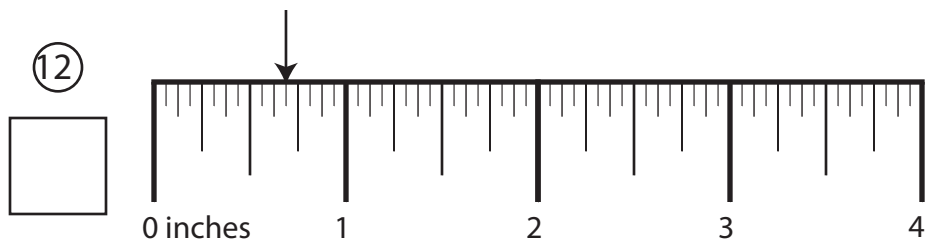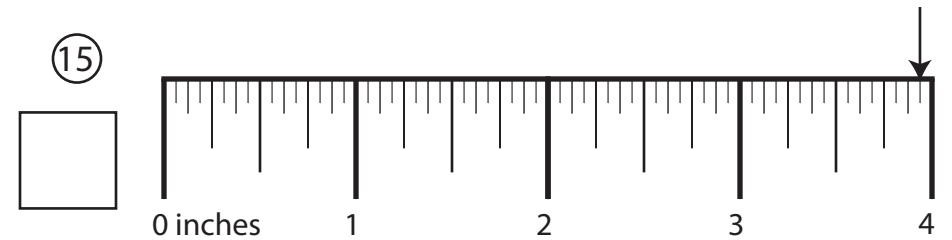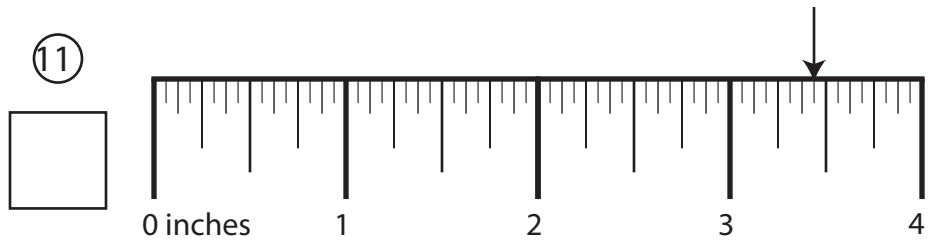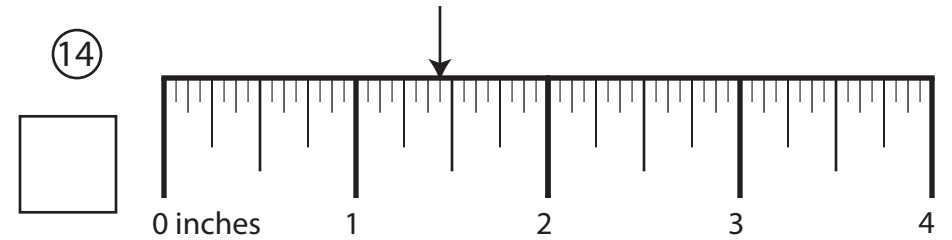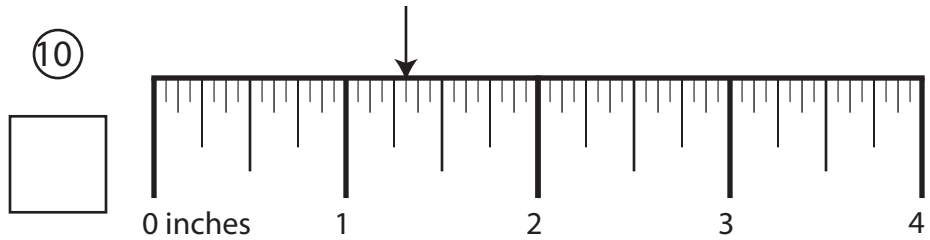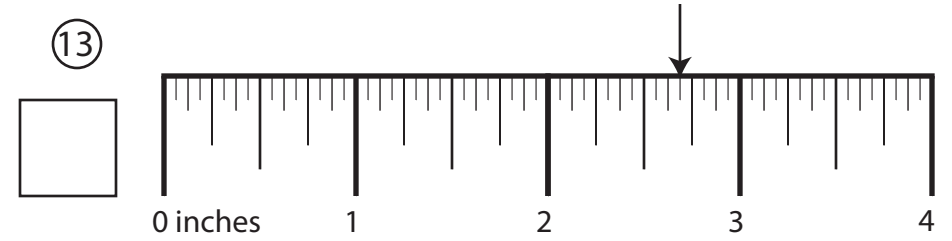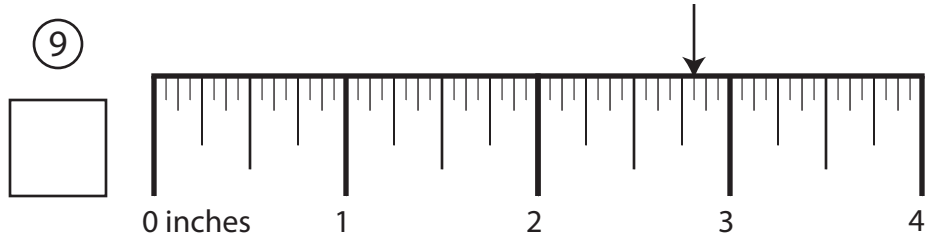
Section IV — More/Less Than

3 4 6

23.   What is ¹⁄₁₆ less than 2 ½?

27.   What is ½ less than 5 ½?

24.   What is ¼ more than 2 ⅛?

28.   What is ⅜ less than 3 ½?

25.   What is ½ less than 3 ⅜?

29.   What is ⅛ less than 5 ½?

26.   What is ½ more than 3 ⅛?

30.   What is ⅜ more than 3 ¼?

Section V — Nail Penetration & Screw Hole Bits

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.   12 ½ common gauge nail penetrate a 4″ green beam?

35.   pilot hole for a 18 gauge screw?

32.   5 common gauge nail penetrate a 3/4″ green girder?

36.   clearance hole for a 8 gauge screw?

33.   8 box gauge nail penetrate a 1 ½″ dry beam?

37.   countersink hole for a 14 gauge screw?

34.   20 penny nail penetrate a 1 ¼″ dry plank?

38.   countersink hole for a 20 gauge screw?

Section VI — Math Calculations

3 4 6

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39. How many pounds of CO_2 are released by burning motor gasoline for 7 weeks in a ET 110-H?

43. How many mmBTUs are generated by running a ULT 399 for 2 weeks?

40. How many pounds of CO_2 are released by burning 271 pounds of East.Hophornbeam?

44. How many pounds of CO_2 are released by burning diesel fuel for 7 months in a GV90+4?

41. How many pounds of CO_2 are released by burning Anthracite coal for 9 hours in a EG-35?

45. Alcohol, ethyl 32oF (ethanol) cycle, 1440 (lb/hr) flowrate, outside is 67°F, inside 56°F?

42. Ammonia, 212oF cycle, 1299 (lb/hr) flowrate, outside is 81°F, inside 51°F?

46. Ammonia, 212oF cycle, 1055 (lb/hr) flowrate, outside is 43°F, inside 44°F?

Section VI — Math Calculations

3 4 6

47. Calcium Chloride cycle, 776 (lb/hr) flowrate, outside is 89°F, inside 66°F?

51 Dodecane cycle, 828 (lb/hr) flowrate, outside is 77°F, inside 60°F?

48. How many mmBTUs are generated by running a ET 110-C for 1 weeks?

52 n-Butane, 32oF cycle, 856 (lb/hr) flowrate, outside is 58°F, inside 90°F?

49. Alcohol, methyl. 60 - 70oF cycle, 562 (lb/hr) flowrate, outside is 53°F, inside 88°F?

53 How many mmBTUs are generated by running a EG-35 for 8 weeks?

50. Alcohol, ethyl 104oF (ethanol) cycle, 748 (lb/hr) flowrate, outside is 87°F, inside 63°F?

54 How many pounds of CO_2 are released by burning kerosene for 8 weeks in a CGi-8?

Section VII — Blueprint Calculations

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55. Shape C, Scale = 24, molding job.

56. Shape E, Scale = 8, paint job.

57. Shape D, Scale = 50, wire job.

58. Shape J, Scale = 50, baseboard job

59. Shape I, Scale = 32, paint job.

60. Shape M, Scale = 48, panel job.

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

62. Shape Q, Scale = 48, molding job.