Area/Acreage/Square Footage/Value of Land Math

1. **Formulas:**

   A. Area = Base times Width (A = B x W)

   B. Base = Area divided by Width (B = A ÷ H)

   C. Width = Area divided by Base (W = A ÷ B)

2. To figure square footage of squares, rectangles and parallelograms, use formula A = B x W.

3. To figure square footage of triangles, use formula A = (B x H) ÷ 2
4. To figure square footage of trapezoids, use formula A = B1 + B2 ÷ 2 x H
5. Converting Measurements: Dimensions may be given in yards, feet or inches.

   A. To convert feet into square yards: Change the dimensions into yards by dividing by three.

      Example: A lot is 90 feet by 120 feet. How many square yards?

      90 ÷ 3 = 30 yards
      120 ÷ 3 = 40 yards
      30 yards by 40 yards = 1,200 Square Yards

   B. To convert yards into square footage: Change the dimensions into feet by multiplying by three.

      Example: A lot is 60 yards by 120 yards. How many square feet in the lot?

      60 x 3 = 180 feet
      120 x 3 = 360 feet
      180' x 360' = 64,800 square feet

   C. To convert inches into footage: Change the inches given into a decimal by dividing the inches by 12.

      Example: A lot is 59 feet, 8 inches by 140 feet, 9 inches. What is square footage?

      8” = 8 ÷ 12 = .667 (59.667)
      9” = 9 ÷ 12 = .75 (140.75)
      59.667' x 140.75' = 8,398.13 square feet

6. To convert square footage into acreage:

A. **MEMORIZE 43,560 square feet to an acre.**

B. Divide the square footage by 43,560 to get number of acres.
Example: A parcel of land is 680' by 750'. How many acres are in the parcel?
680' x 750' = 510,000 SF ÷ 43,560 = 11.70 acres

7. To convert acreage into square footage:

Multiply the number of acres by 43,560 feet.
Example: A parcel of land containing 6 acres has how many square feet?
6 x 43,560' = 261,360 square feet

8. Cost/Price per square foot/acre/front foot:

When converting measurements to a cost or value per unit, divide the cost/value by the unit of measurement.

Example: A parcel of land contains 180,000 square feet with a road frontage of 800 feet, and recently sold for $80,000.

A. What is cost per square foot?
$80,000 ÷ 180,000 SF = $0.444 per SF.

B. What is cost per acre?
180,000 SF ÷ 43,560 = 4.13 acres
$80,000 ÷ 4.13 = $19,370.46 per acre

C. What is cost per front foot?
$80,000 ÷ 800' = $100 per front foot

9. Practice Problems

A. Sam bought a parcel of land containing 55 acres and 1,200 feet of road frontage. Todd wants to buy the neighboring tract with the same depth, but with 4,000 feet of road frontage. How many acres are in the tract Todd wishes to buy?

(a) 165 (b) 110 (c) 183 (d) 150

B. Bob bought a 344.35-acre tract. Its frontage was 3,000 feet. He wants to subdivide into 150' x 150’ lots, with 8% of the land being dedicated to streets. How many lots can he get?

(a) 613 (b) 661 (c) 666 (d) 592

C. How many acres are there in a rectangular lot that is 385 feet long and 297 feet wide?

(a) 2.347 (b) 2.625 (c) 2.139 (d) 2.536

D. What is the cost of a lot 132' x 330' at $800 per acre?

(a) $34,560 (b) $800 (c) $330 (d) $17,420

E. A rectangular tract of land whose dimensions are 500' by l,000' was sold for $25,380. What was the price per acre?

(a) $1,042 (b) $2,211 (c) $1,333 (d) $1,200

F. A rectangular acre of land has a width of 165 feet. What is the depth of the property?

(a) 165' (b) 225' (c) 718 ' (d) 264'

Mr. Jones owns a tract of land that is 450’ x 600’. He wants to develop the parcel into a residential subdivision. Each lot is to be 100’ x 150'. He needs to dedicate areas for streets which will amount to 10% of the land. Answer questions g, h, and i.

G. How many square feet are in the parcel?

(a) 27,000 (b) 270,000 (c) 170,000 (d) 300,000

H. If 10% of the land must be allocated for streets, how much is left for lots?

(a) 27,000 SF (b) 270,000 SF (c) 243,000 SF (d) 5.8 acres

I. How many lots can Mr. Jones develop on the remaining land?

(a) 17 (b) 16 (c) 21 (d) 18

J. A parcel of land is 660’ x 660’ and a small stream equally divides the parcel into two triangular shaped lots. How many acres are in each lot?

(a) 10 (b) 2.5 (c) 5 (d) Must know width of stream to figure

K. A lot is 60' 9" by 100' 7". What is square footage?

(a) 6,132.63 (b) 6,110.24 (c) 6,000 (d) 6,100

Solutions to Acreage/Area Problems:

A. 55 acres x 43,560 = 2,395,800 SF ÷ 1200' frontage = 1,996.5 depth (Sam's Tract)
1996.5' x 4000' = 7,986,000 SF ÷ 43,560 = 183.3 acres in Todd's tract
(c)

B. 150' x 150' = 22,500 SF per each lot
344.35 acres x 43,560 = 14,999,886 SF x .92 (100% - 8%) = 13,799,895 SF ÷ 22,500 SF = 613 lots
(a)

C. 385' x 297' = 114,345 SF ÷ 43,560 = 2.625 acres
(b)

D. 132' x 330' = 43,560 SF = 1 acre x $800 = $800
(b)

E. 500' x 1,000' = 500,000 SF ÷ 43,560 = 11.478 acres
$25,380 ÷ 11.478 = $2,211.19
(b)

F. 43,560 ÷ 165' width = 264’ depth
(d)

G. 450' x 600' = 270,000 SF
(b)

H. 270,000 x .90 (100% - 10%) = 243,000 SF
(c)

I. 100' x 150' = 15,000 SF per lot
243,000 ÷ 15,000 = 16.2 lots = 16 lots
(b)

J. 660' x 660' = 435,600 SF ÷ 43,560 = 10 ÷ 2 lots = 5 acres per lot
(c)

K. 60'9" = 60.75 (9" ÷ 12" = .75)
100'7" = 100.58 (7" ÷ 12" = .58)
60.75 x 100.58 = 6,110.24
(b)