Building Trades

Reviewing the Basic Skills and Knowledge
Examples of Measurements

a) 21 inches End to End

b) 21 and 1/8 End to Center

c) 22 and 1/4 Center to Center

d) 23 and 1/2 Outside to Outside
Adding and Subtracting Measurements
(Example of 2’ 10 1/2” and 1’ 3 1/8”)

• Converting feet to inches
  Multiply feet by 12 to get total inches
  2’ 10 1/2”: (2’ * 12 = 24” + 10 1/2” = 34 1/2”): 34 1/2”
  1’ 3 1/8”: (1’ * 12 = 12 + 3 1/8” = 15 1/8”): 15 1/8”

• Convert to Decimal OR Similar Fractions
  1/2” = .5 -> 34.5
  1/8” = .125 -> 15.125
  1/2 -> 4/8 -> 34 4/8
  1/8 -> 1/8 -> 15 1/8

• Add or Subtract converted numbers
  34.5 + 15.125 = 49.625 OR
  34 4/8 + 15 1/8 = 49 5/8
  34.5 – 15.125 = 19.375 OR
  34 4/8 – 15 1/8 = 19 3/8
Using PI (≈3.14159)

(Example 12 inch Nominal Pipe Size[12” I.D. and 12.75 O.D.])

• Using PI to find Circumference:

\[ \pi \times \text{Diameter of the pipe} = \text{Circumference} \]
uses outside diameter
\[ 3.14159 \times 12.75 \approx 40.055 \rightarrow 40 \frac{1}{16}” \]

• Using PI to find Area:

\[ \pi \times r^2 \]
Uses inside Diameter(d/2 = radius)(r = 12/2 = 6)
\[ 3.14159 \times 6^2 \rightarrow 3.14159 \times 36 \approx 113.097 \rightarrow 113 \frac{3}{32} \text{ sqin} \]
Square each Piece

- Using a Square tool to ensure flange faces, elbows and Rise/Run pieces are square to each other
- May need to use a Tape to ensure distance is the same along the run of pipe.
- While its useful to level pieces together, squaring provides more accurate results.
Two Hole

• Ensure each flange is oriented correctly
• Use a level to make sure the top two holes are level with all Runs.
Take-offs

- Blue Book has multiple sizes and fittings listed
- Rule of Thumb:
  - 90° Multiply size by 1.5 (6” example: divide by 2 -> 6 : 3 = 9” (add both numbers)
  - 45° Multiply size by .625 (6” example: divide by 2 (3x’s) -> 6 : 3 : 1.5 : .75 (add 2nd and 4th numbers)

- External Videos demonstrating these concepts:
  - [External Video 1](https://youtu.be/X5fE2-rwHbE)
  - [External Video 2](https://youtu.be/hxH55y8DwRQ)