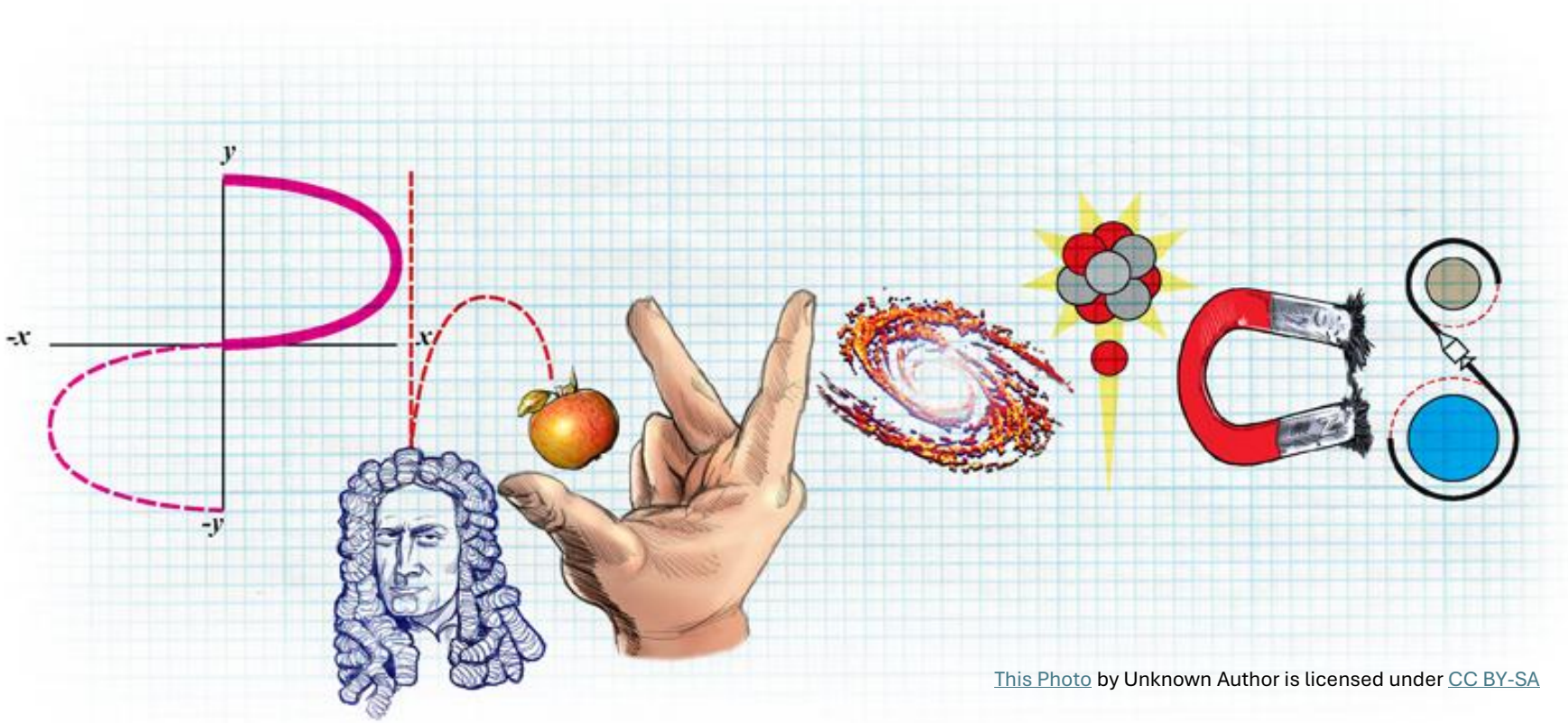


SURVIVAL SCIENCE LESSONS 2B

WHAT IF ...

What if you were living on Earth after the global flood...

1. What would your survival priorities be?
2. What simple tools would you want to bring with you on the boat?
3. What did God give Noah to make survival possible?

INSTRUCTIONS
MEASUREMENTS

God provided Noah with the ARK'S **DIMENSIONS** – a measurable extent of some kind, such as length, breadth/width, height/depth.

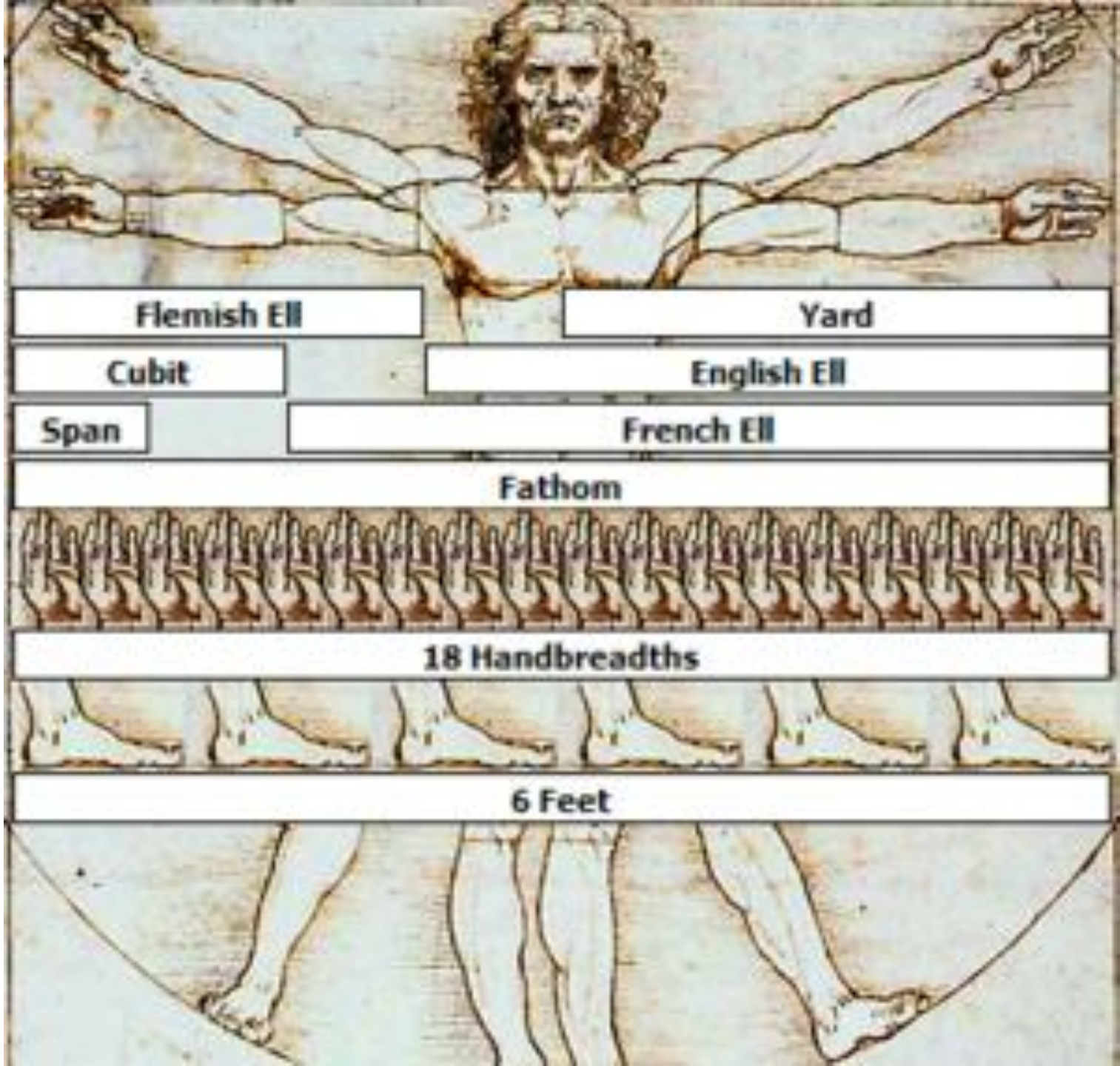
LENGTH	300 cubits = ~450 feet or ~135 meters long
WIDTH	50 cubits = ~75 feet or ~23 meters wide
HEIGHT	30 cubits = ~45 feet or ~14 meters tall

CUBITS vs METERS

- One Cubit = 1.5 Feet
- One Meter = ~2 Cubits
- One Meter = 3.281 feet

English/US Measures are more cumbersome.

We'll use metric, the **STANDARD for Physics.**



PHYSICS METRIC STANDARDS

Measurement	Base unit	
length	meter	(m)
mass	gram	(g)
volume	liter	(l)
time	second	(s)

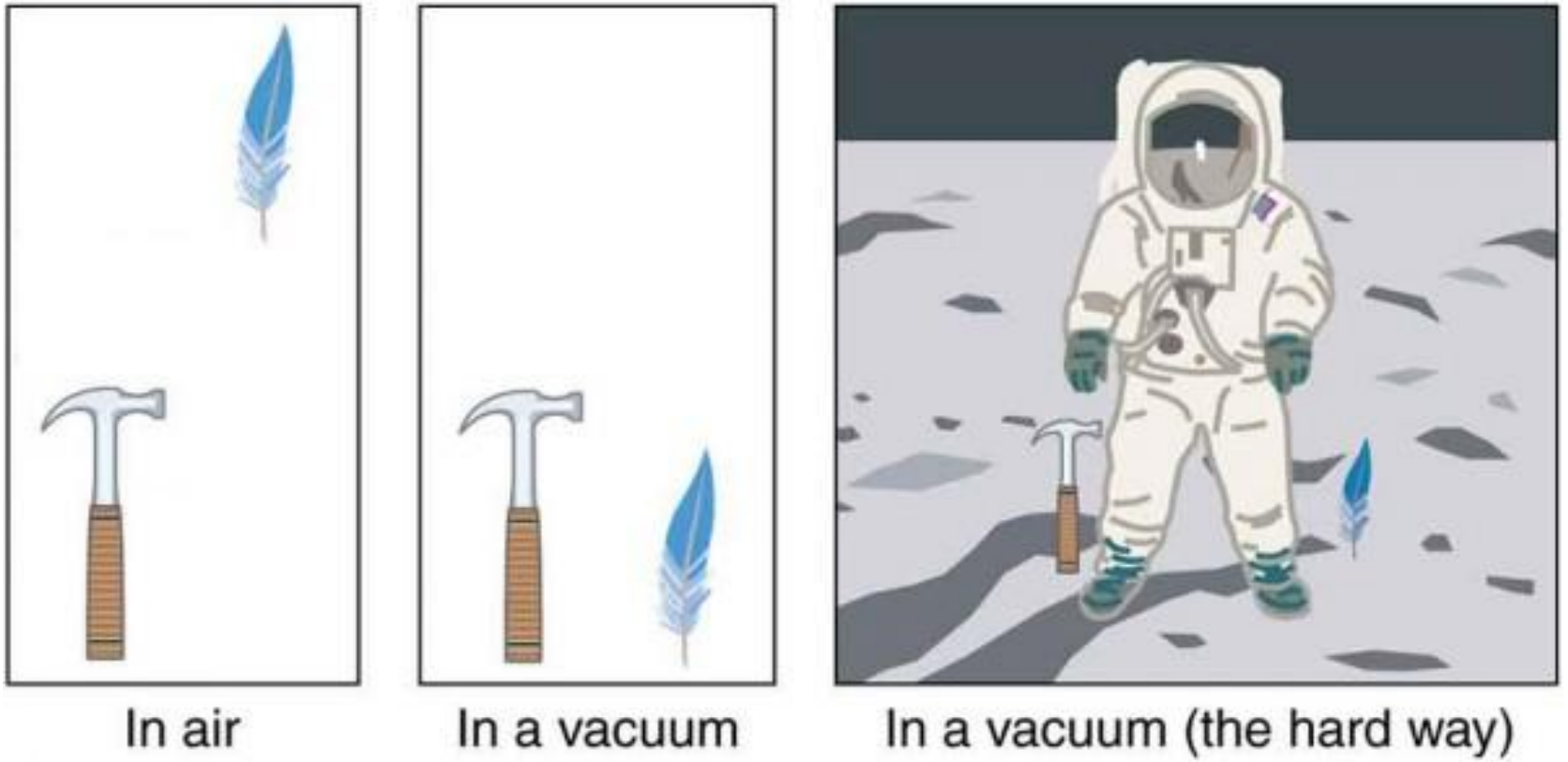
- Universally accepted units of measurement with fixed values. An SI unit is the International System of Units.
- **Metric divisions are Base 10, meaning they change for each measure of 10.**
- Time is a bit different with a 24 hr day, a 60 min hr, a 60 sec minute. However, further divisions are commonly made in Base 10.

Experiments with Measurements/Meters

The acceleration due to gravity on Earth is ~10 m/s^2

The acceleration due to gravity on the Moon is ~1.625 **meters per second** squared.

We use measures to experiment!



https://youtu.be/Oo8TaPVsn9Y?si=ftgrdTQUiwUm1FT1

BASE 10 BASICS

GOD GAVE US: **10 fingers**

10 toes

We count by 1’s, 10’s, 100’s

These are Base 10 numbers

Our decimal system is Base 10

Our changing numbers are Base 10

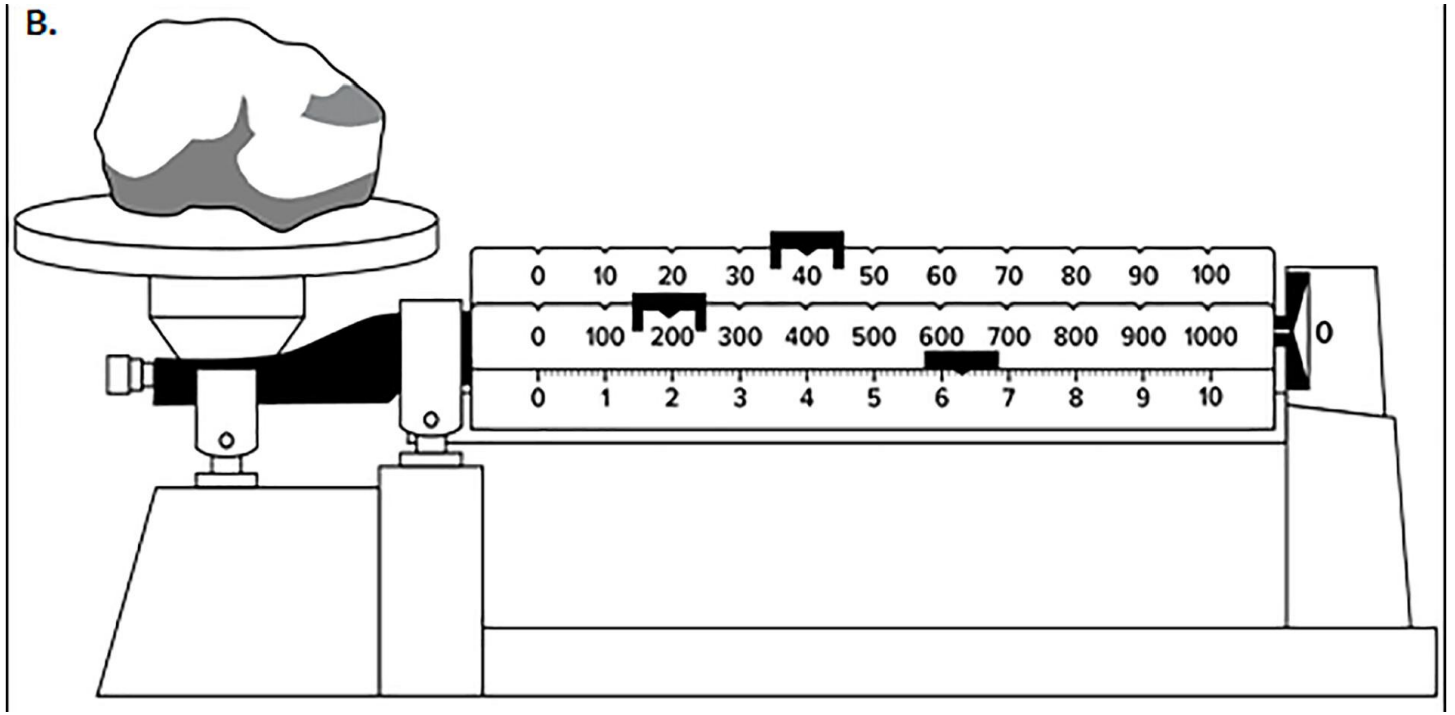
tens, hundreds, thousands

Base 10 Measurements

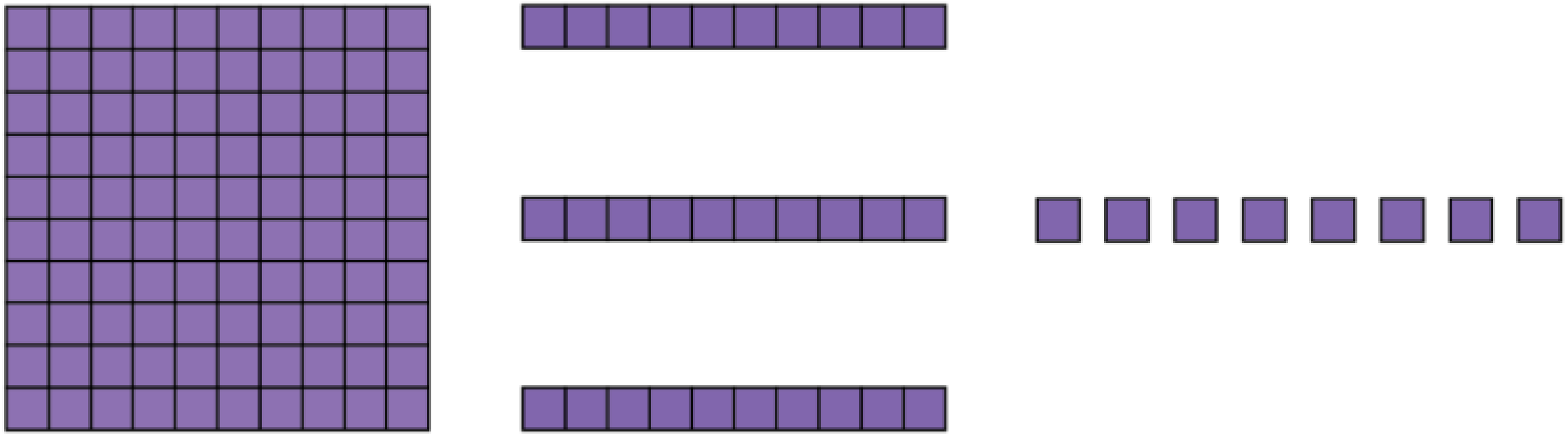
Scaler values are normally Base 10.

A scale (right) shows: 1's, 10's, 100's grams on separate beams.

Weight Measures



Linear to Squares – 10 x 10 = 100 squares

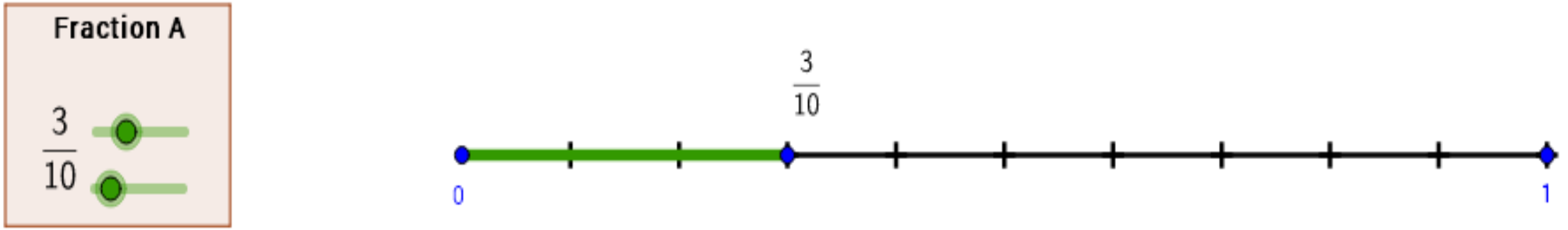


1 hundred

3 tens

8 ones

Base 10 is used for the decimal system

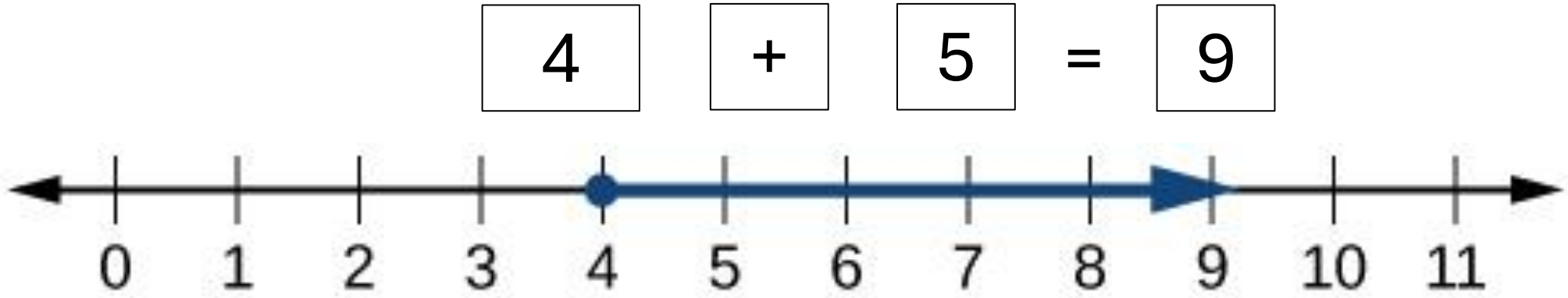


Decimal Values: 10th's are equal to decimals:

3/10's = .3 or 0.3

Number Lines with Vectors

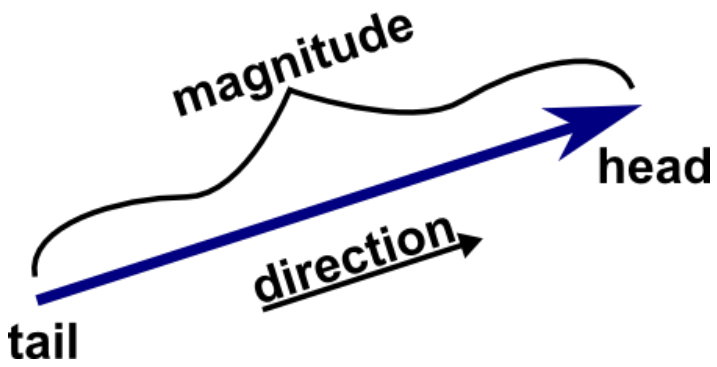
Learn to View Number Lines AND Vectors

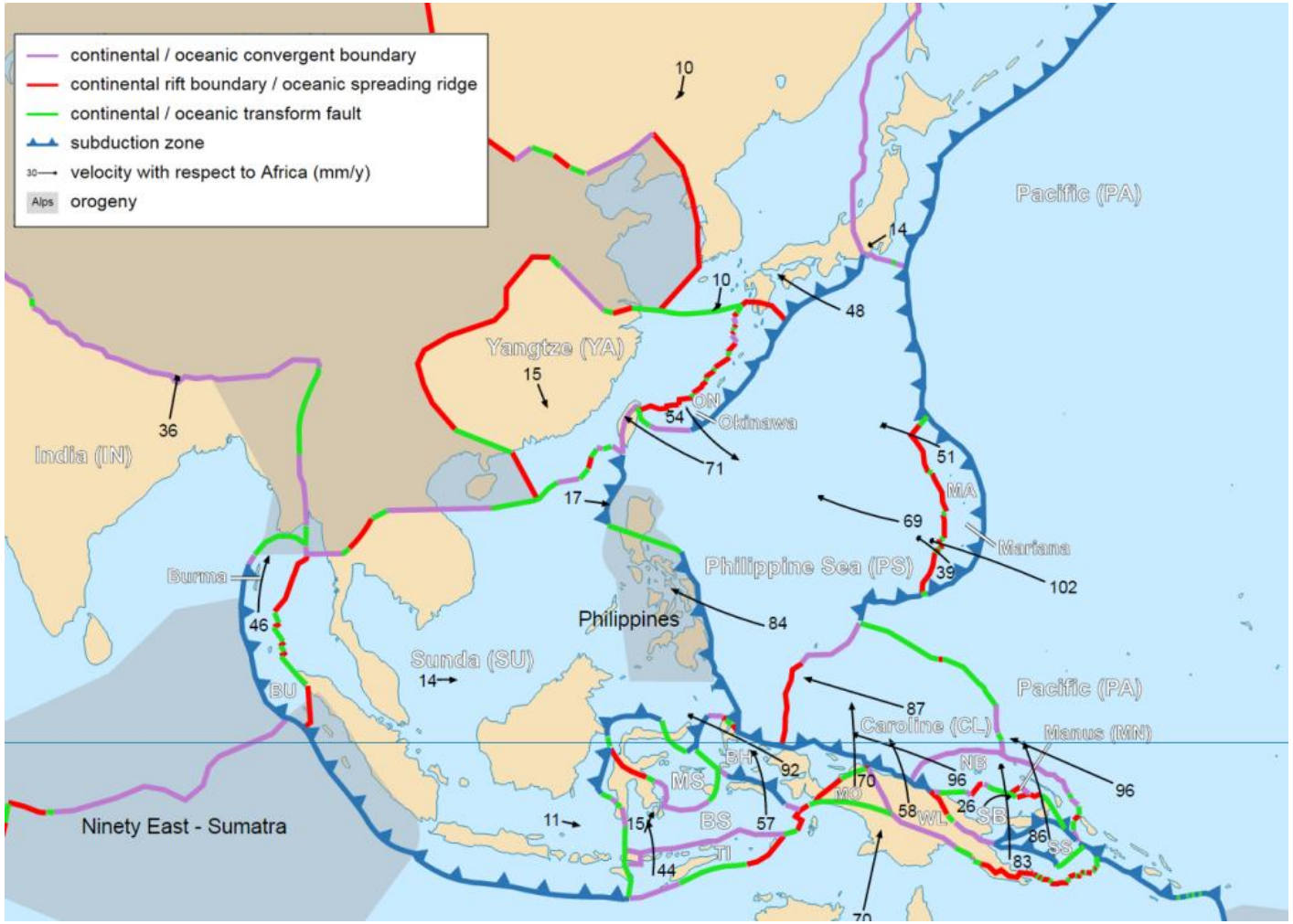


Although a standard number line has only 2 directions, shown as positive and negative, can be used for anything with only two opposite directions, such as north/south, or east/west.

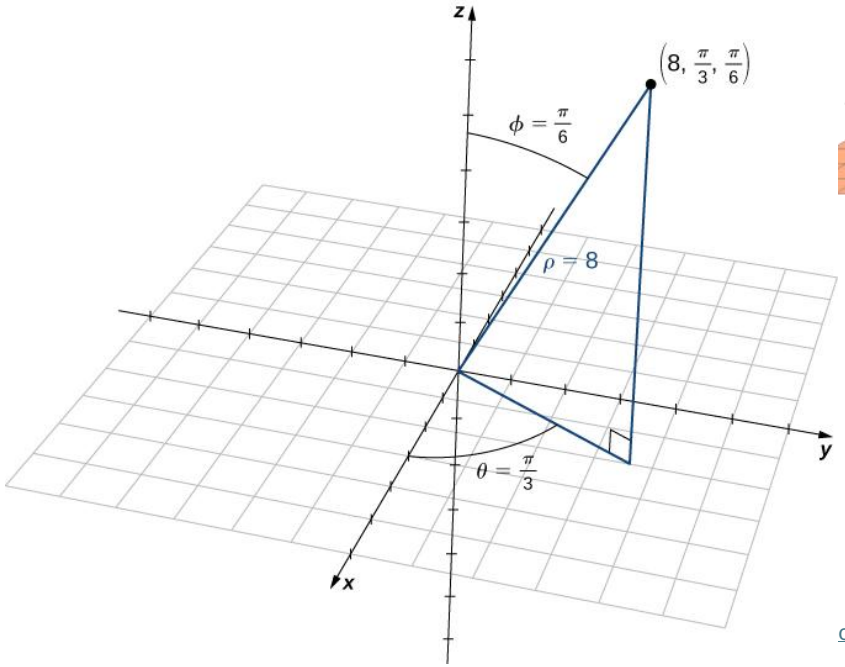
Vectors 2-D

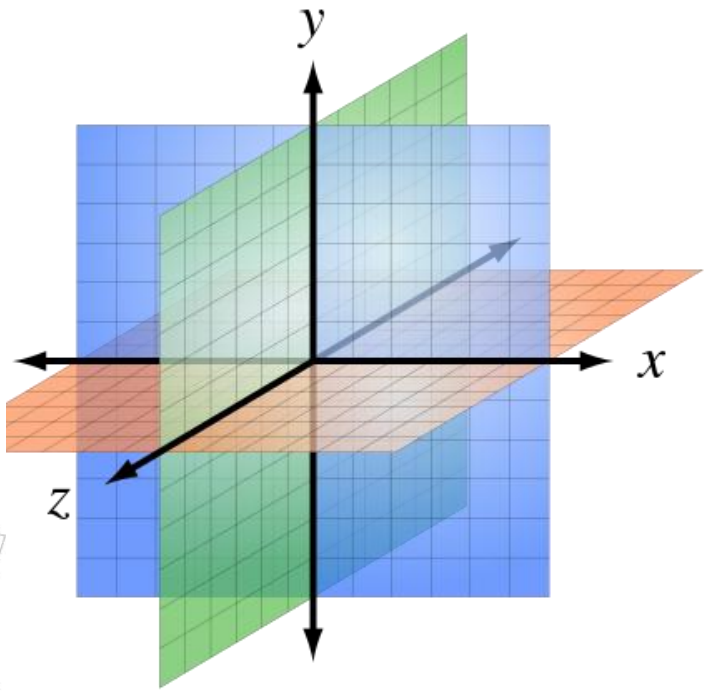
- Vectors indicate magnitude and direction
- Acceleration and Velocity are vector quantities
- Example plate motion

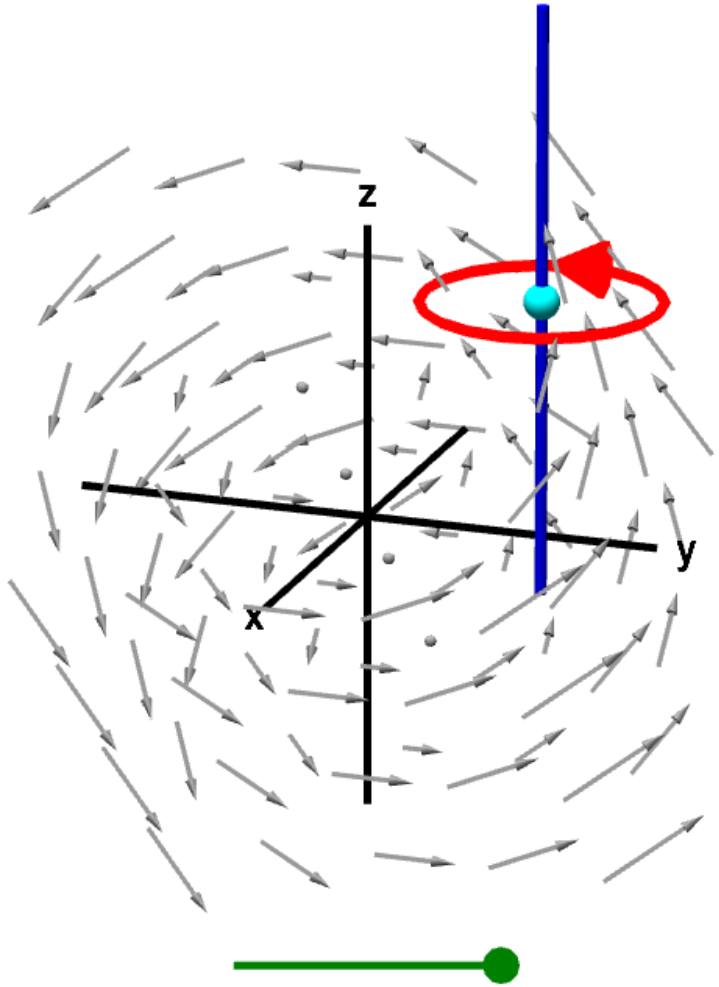




3-D Vectors require X, Y, Z Positions

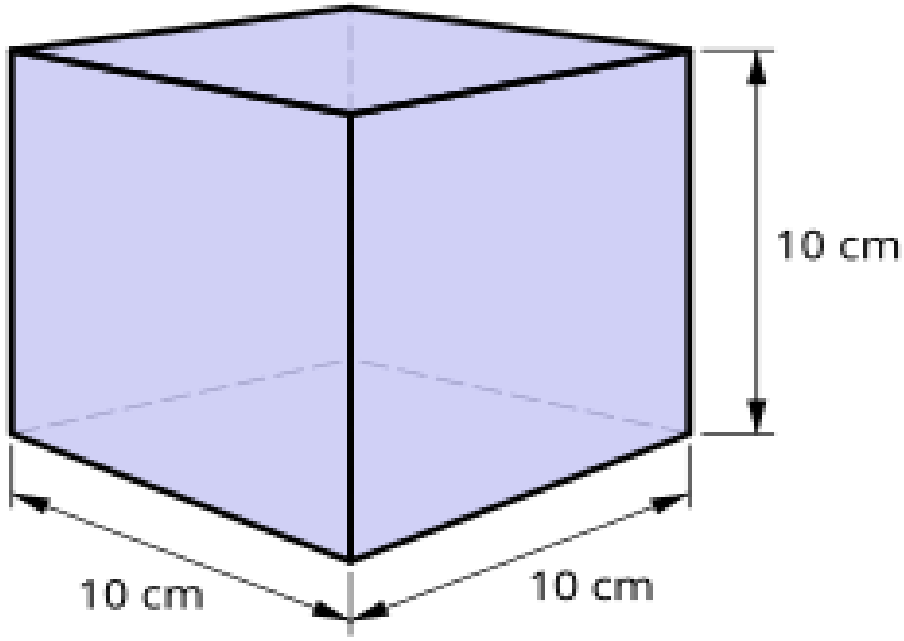






Cubic Measures

Capacity, Volume, Liquids
Displacement, and Others



THE ARK MEASURES

LENGTH 300 cubits = ~450 feet or ~137 meters long
WIDTH 50 cubits = ~75 feet or ~23 meters wide
HEIGHT 30 cubits = ~45 feet or ~14 meters tall

The Volume/Capacity of the Ark Calculations

CUBITS

- 300 LONG
- 50 WIDE
- 30 TALL

300 X 50 X 30 = 450,000 cubic cubits or cubits^3

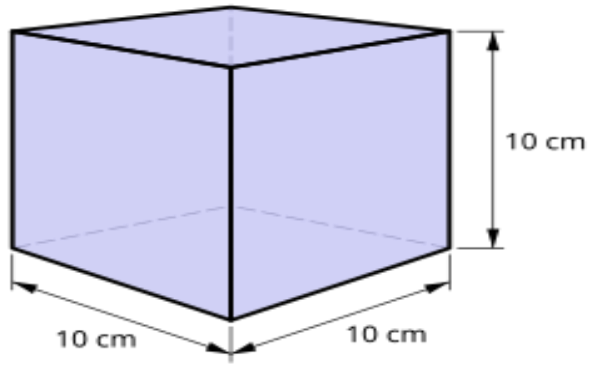
METERS

- ~137 LONG
- ~23 WIDE
- ~14 TALL

APPROXIMATE CONVERSION

137 x 23 x 14 = 44,114 cubic meters

Worksheet Problem



2-D Problem

What is the **area** of one side (sq cm): _____sq cm

10 x 10 = _____ sq cm

What is the area in sq mm _____ sq mm

(Be sure to multiply 100 mm x 100 mm for sq mm. Note sq mm is 100 times greater)

3-D Problem

What is the **volume** of the cube in cubic centimeters?

To find cubic centimeters (cm^3) multiply l x w x h.

10 cm x 10 cm x 10 cm = _____cubic cm or _____ cm^3

In cubic mm (100mm x 100 mm x 100 mm = 1,000,000 mm^3)

THE CAPACITY OF THE ARK

- 450 semi-trailers or
- 570 railroad cars.
- This is more than adequate space to house all the diverse kinds of animals aboard the ark.

REMEMBER THESE THINGS

MEASURES: (a Ruler)

Luke 6:8 A good measure, pressed down, shaken together, running over, will be put into your lap; for the measure you give will be the measure you get back.

We should measure our lives, not as man would, but as God does. Too often we'll find ourselves following the crowd, or valuing what others believe is important, such as "keeping up with the Jones's." Learn to rightly measure, as Noah did, so you don't miss the boat when God is seeking you to fulfill a mission or calling.