Scaling

Geometry

Angles
finding unknown angles

Triangles
length, angle
- drawing with conditions

Cross Sections
2D figures from 3D figures

Remember

Ratios
relationship between quantities

girls : boys
girls to boys

girls
boys

Rates
relationship between 2 units of measure

15 miles per hour

$2 per pound

Proportions
when 2 rates or ratios are equivalent

$\frac{6mi}{2h} = \frac{3mi}{1hr}$ or $\frac{2}{4} = \frac{1}{2}$

Scale Drawing

Drawing of Garden Bed

16in = w

25in = l

Scale 4in:5ft

What strategies can we use to find the dimensions of the actual garden?

Actual Garden Bed

width length

Area of Actual Garden Bed

Real Life Application
- architecture → creates the blueprint
- construction → interprets the blueprint

Blueprint Length (in.)	2				10
Actual Length (ft)	6	9	12	15	18

10in

Scale Factor
2in : 6ft

We know... | Inquiry Geometry | We want to know...

Standard and Mathematical Practice
- We will use models to find the actual dimensions in problems that scale up or scale down using tables and scale factors

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Module 8

UNIT PLANNING TOOL

Unit 4 : Geometry

CCSSM:

7.G.1 - scale drawings
7.G.2 - draw geometric shapes with conditions
7.G.3 - 2D figures from cross sections of 3D figures
7.G.5 - find unknown angles

Math Practices being emphasized:

MP.4 Modeling
MP.5 Using Tools
MP.2 Reasoning

Essential Questions

How can you use scale drawings to solve problems?

How can you draw shapes that satisfy given conditions?

How can you identify cross sections of 3-D figures?

How can you use angle relationships to solve problems?

Pre and Post Assessments

Metacognition Boxes

CeoMath Are You Ready?

Lesson Quizs
End of unit test

Key Concepts

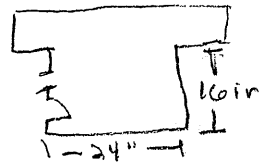
Scale factors
Scaling up/down
Drawing triangles from conditions

Describe 2-D figures from 3-D figure cross sections

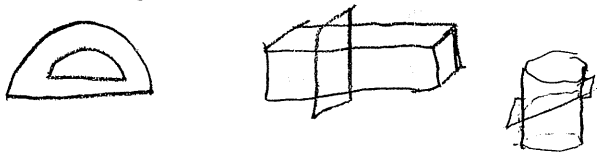
Solve for unknown angles in figures

Visual Models of Concepts

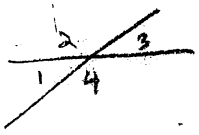
Scale
1 in
1 ft



22cm
14cm
5cm : 8ft



Algorithms/Diagrams



l_1	3	6	9
l_2	5	10	15

$\frac{2in \div 2}{3ft \div 2} = \frac{1in}{1.5ft}$ ← Scale Factor

$2+3<6$

if $a+b>c$, the one triangle

$54^\circ + 3x = 180^\circ$

Connections (Real World Applications)

Engineers
Architects
Construction
Map Makers
Race designers
Game Animation

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Language Functions/Structures (Objectives)

Explain

The scale factor tells us _____.

Compare

Angles tell _____ about triangles, but side lengths tell _____

Describe

~~This 3-D figure has a _____ in this cross section.~~

Vocabulary

scale (drawing)	angles	rectangle	ellipse	angles
ratio	protractor	triangle	hyperbola	Vertical
proportions	unique triangle	radius	cross section	adjacent
similar	congruent (angles)	faces	intersection	complementary
dimensions	oval		m∠	supplementary

Focus and Motivation

Literature

Pythagoras and the Ratios
by Julie Ellis

What's your Angle
by Julie Ellis

Sir Cumference and the Dragon of Pi
by Cindy Neuschwander

Cut Down to Size at High Noon
by Scott Sundby

Video / Animation

Brainpop
- Similar figures
- Transformations
- Scale Drawings

Study jams
- Congruent figures