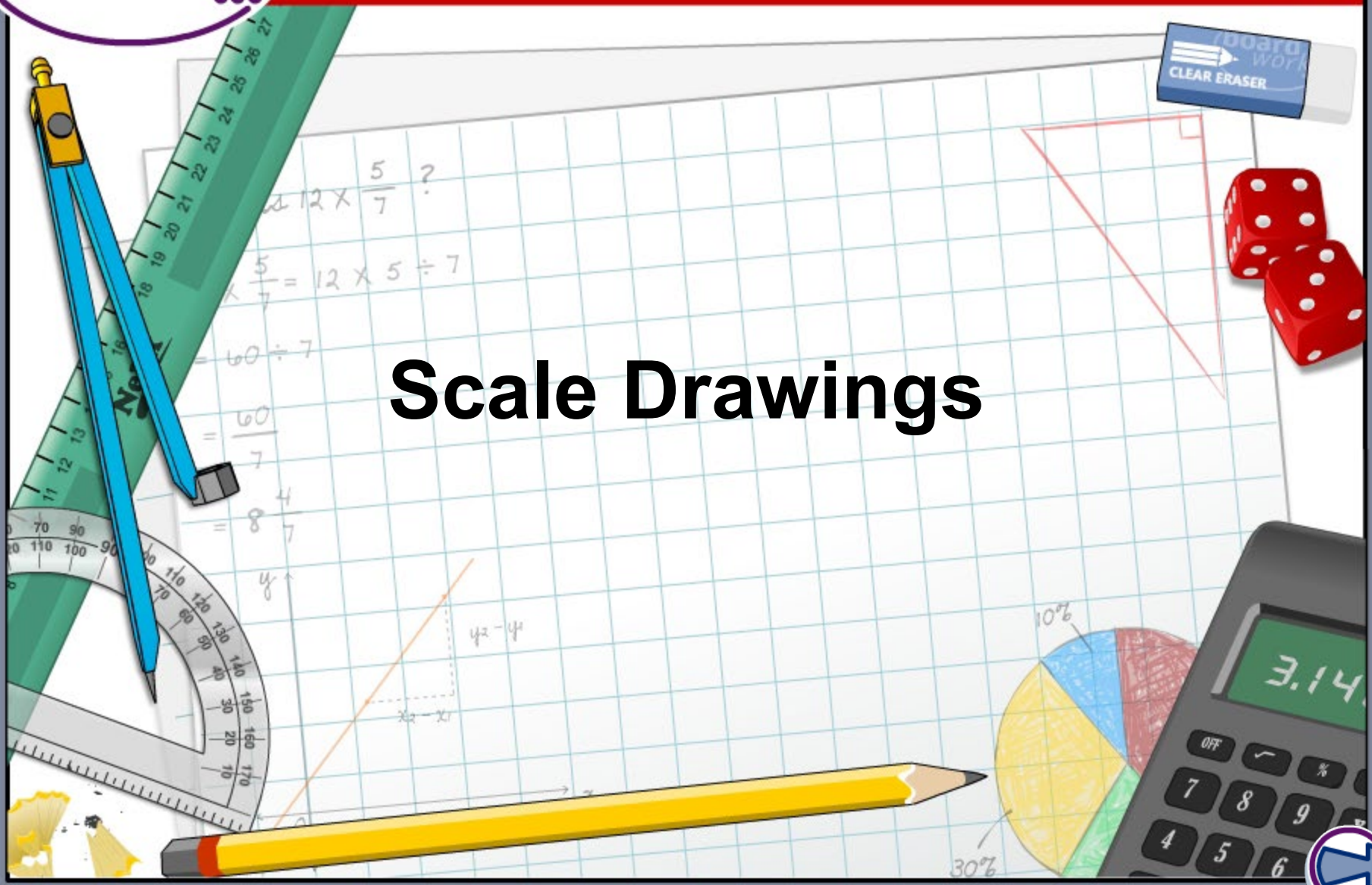
Scale Drawings



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Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

8) Look for and express regularity in repeated reasoning.

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

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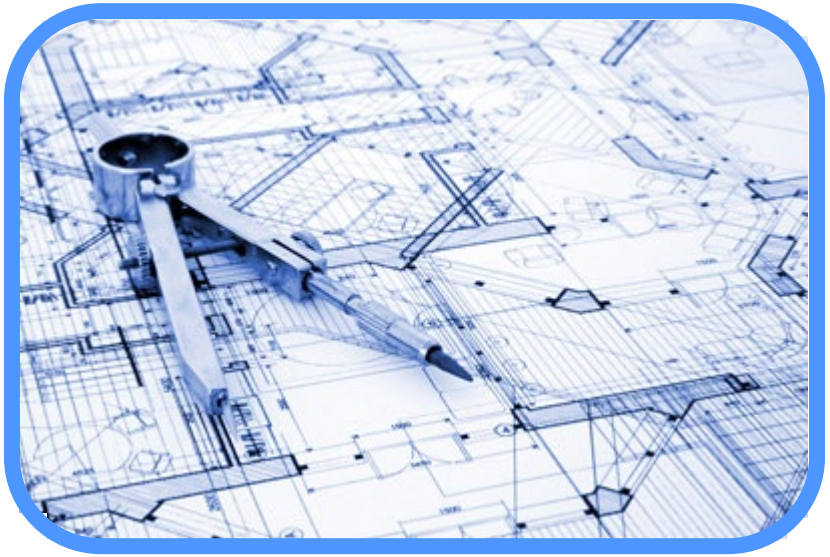
Scale drawings

We use scale drawings to represent real objects drawn in proportion to their actual sizes.

If we are given a scale for an image, then we can figure out the size of an object in real life.

What are some practical uses for scale drawings?

- maps
- blueprints
- floor plans.



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Scale drawings

Here is a scale drawing of a car.

Every 1 in. in this drawing represents 36 in. in real life.

If the length of the car in the drawing is 4.5 in., what length is the car in real life?

Length of the car in real life $= 4.5 \text{ in.} \times 36$

$= 162 \text{ in.}$

$= 13.5 \text{ ft.}$

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Find the missing length

The bottom image is a scale drawing of the one above it. What is the length of the missing side?

10 cm

7.5 cm

We know that 10 cm is 4 cm in the scale drawing.

10 cm ÷ 4 cm = 2.5

So: 4 cm × 2.5 = 10

We can find the missing length by finding 3 cm × 2.5.

4 cm

3 cm

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Find the missing values

Examine the following shapes and their scale drawings. Use the measurements provided to find the hidden values.

Press **start** to begin.

start

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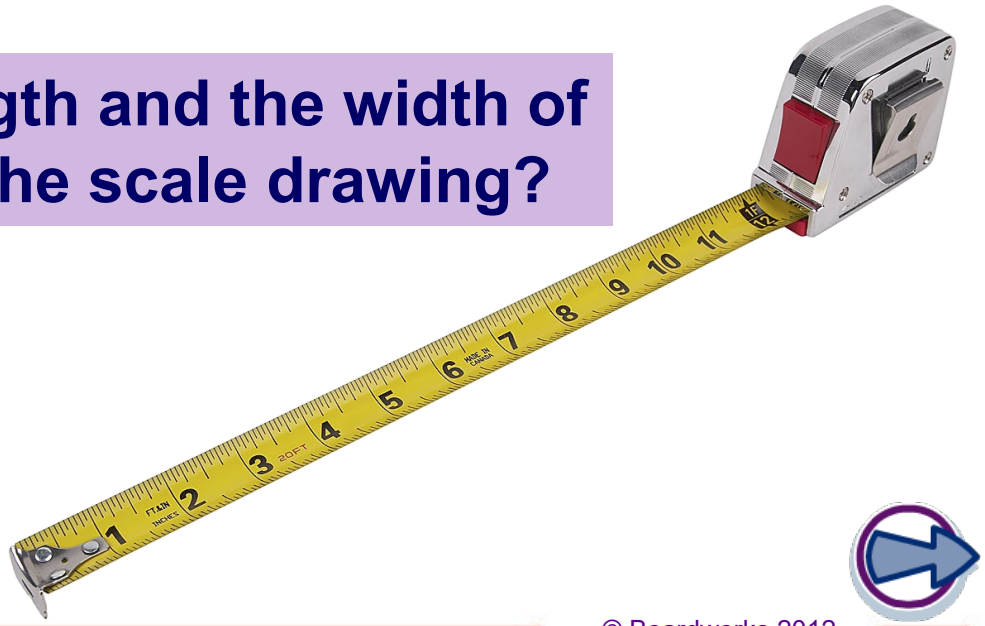
Drawing a plan

On maps and plans, the scale is usually given as a ratio.

Jaime wants to draw a plan of his bedroom using a scale of 1 in. : 12 in. That means that every 1 in. in the plan represents 12 in. (or 1 ft.) in real life.

He measures his room to find that it has a length of 120 in. and a width of 90 in.

What will the length and the width of the room be in the scale drawing?



Length = 120 in. ÷ 12 = 10 in.

Width = 90 in. ÷ 12 = 7½ in.

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Drawing a plan

Jaime uses a table to convert between the sizes of the things in his room and their sizes in his plan. He is using a scale of 1 in. : 12 in. Drag each value to the correct place to help Jaime complete his table.

Press **start** to begin.

start

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Using scale to read maps

A map uses a scale of 1 cm : 40,000 cm.

How many km are represented by 1 cm on the map?

1 cm on the map is 40,000 cm in real life.

$$40{,}000\,\text{cm} = 400\,\text{m} = 0.4\,\text{km}$$

1 cm on the map is 0.4 km in real life.

Two towns are 3.5 cm apart on the map. How far apart are they in real life?

$$3.5\,\text{cm} \times 0.4 = 1.4\,\text{km}$$

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Life skills: map reading

A map uses a scale of 1 cm : 50,000 cm.

a) How many km are represented by 1 cm on the map?
b) Two towns are 10.5 cm apart on the map. How far apart are they in real life?
c) Two towns are 2.3 km apart in real life. How far apart are they on the map?

Press the **next** arrow to work through the questions and their solutions one at a time.

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