Task Title: Calculate Angles

OALCF Cover Sheet – Learner Copy

Learner Name: _____

Date Started: _____

Date Completed: _____

Successful Completion: Yes ☐   No ☐

Goal Path: Employment ☐   Apprenticeship ☐

Secondary School ☐   Post Secondary ☐   Independence ☐

Task Description: Carpenters calculate angles to construct trusses and stairs.

Main Competency/Task Group/Level Indicator:

- Find and Use Information/Read continuous text/A1.1
- Find and Use Information/Interpret documents/A2.2
- Understand and Use Numbers/Manage money/C1.2
- Understand and Use Numbers/Use measures/C3.3

Materials Required:

- Pen/pencil and paper and/or digital device
- Calculator or digital device with calculator function

Learner Information

Carpenters use calculators and formulas to calculate angles to meet safety regulations and to determine amounts of material required.

Review the Angle Drawings information and read the Ontario Regulation 67/93: Healthcare and Residential Facilities document about ladder safety.

Angles Drawings

Length of stair/stringer (c)

Rise (a)

Run (b)
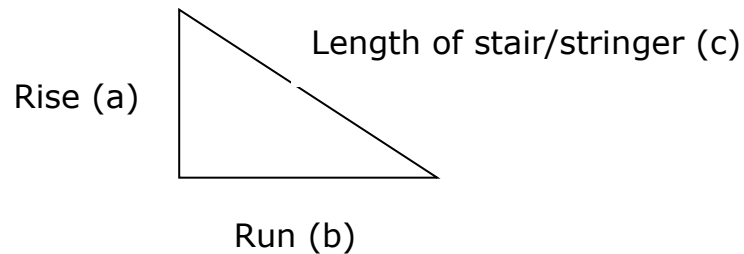
All measurement answers are to be in feet or decimals of feet.

Carpenters use the $a^2 + b^2 = c^2$ formula to calculate lengths of stairs and stringers (c) where a = height or rise and b = length or run.

**Ontario Regulation 67/93: Healthcare and Residential Facilities**

83. When a ladder is being used it shall,

(a) be placed on a firm footing and secured against slipping;

(b) if the ladder is between six and nine metres in length, be securely fastened or be held in place by one or more workers while being used;

(c) if the ladder exceeds nine metres in length, be securely fastened or stabilized to prevent it from tipping or falling;

(d) when not securely fastened, be inclined so that the horizontal distance from the top support to the foot of the ladder is not less than one-quarter and not more than one-third of the length of the ladder; and

(e) if the ladder is likely to be endangered by traffic, have a worker stationed at its foot to direct such traffic or have barriers or warning signs placed at its foot. O. Reg. 67/93, s. 83.

[Source: https://www.ontario.ca/laws/regulation/930067/v22#BK17]

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Work Sheet

Task 1: Look at the diagram of a ladder. Calculate the range of allowable distance between the wall and the bottom of the ladder when the ladder is not securely fastened as described in Ontario Regulation 67/93: Healthcare and Residential Facilities.

LADDER
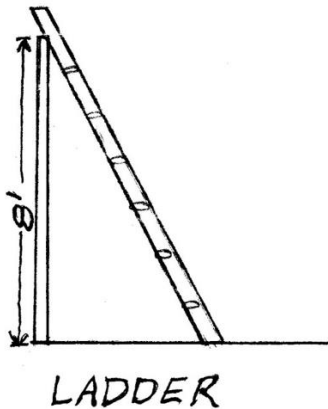
Answer:

Task 2: Look at the diagram of a truss.
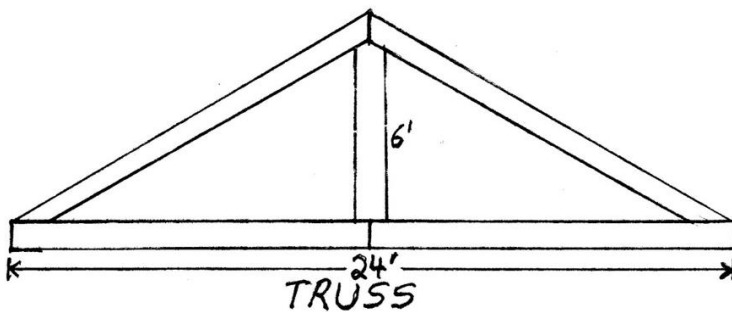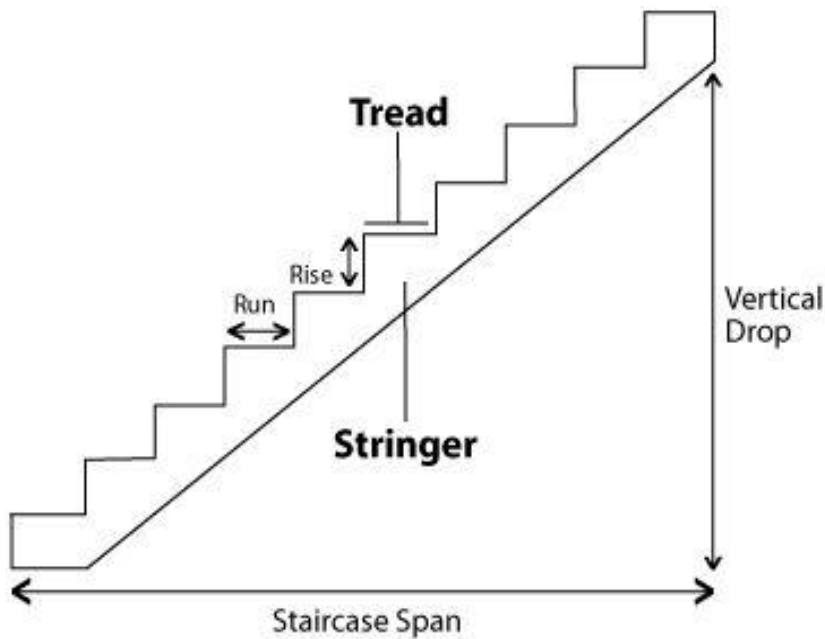

TRUSS

a) Calculate the length of the remaining sides of the truss.

Answer:

b) If 2X4 lumber is 36¢/linear foot, plus HST, how much will the lumber cost for the truss?

Answer:

Task 3: Look at the diagram of a staircase. A staircase is to be built from the second floor of the house to the patio. The staircase will join the second floor deck twelve feet above the ground and rest on the patio nine feet from the house. How long will each stringer be?

Answer:

Answer: