ACTIVITY EXAMPLE

KEY WORDS

Numeracy | percentages | decimals | ratios | number | valuations | calculations | pricing | measurement | area | perimeter |

ALSO USEFUL FOR

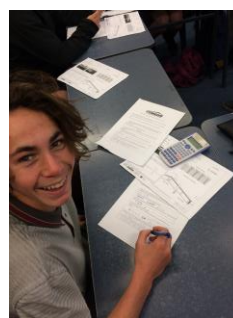Business studies | Metal Technology | Design and Visual Communication

PROGRAMME OUTLINE

3 POINTS OF CONTACT
- COMAG Staff come into classroom (x2)
- Workplace visit (x1)

EXAMPLE

1. COMAG come into classroom, introduce themselves, background to plumbing and roofing, their careers and how maths is used in the industry.

2. Workplace visit includes tour of the business, meeting staff and hearing about different careers. Seeing plumbing and roofing 'behind the scenes'.

3. Student Activity: Reroof the Matamata College Hall

For more on SSEP see:
www.smartnz.nz

ACTIVITY EXAMPLE

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COMAG LIMITED – MATAMATA COLLEGE SCHOOL ROOF REPLACEMENT

Recently COMAG have replaced the School Hall Roof, we have put a series of questions together to allow you to calculate some of the cost of replacing the roof.

We have also added a plan that will help you learn the terminology of the words used (See attached Plan)

The steps are in a process that we need to follow every time we quote to install a new roof.

1. Using the roof plan, calculate the square meterage of the college roof, Length x Width (the red dotted line is the outside perimeter of the roof with the center ridge cap in the middle)

2. Calculate the length of each side (Roof Profile Sheet Length – From Ridge to Gutter)

3. Calculate the actual sheet length of roofing iron (x pitch of roof) using the 'Table for Roof Slope' Colum 'Rafter Length'

4. Calculate how many sheets of iron needed.
   Length of roof (Ridge or Gutter) ÷ Roofing Profile Effective Cover (round to highest whole number)

5. Calculate how many lineal meters of iron is needed (Total Sheets x Actual Sheet Length)

6. Calculate the total cost of roofing iron, Cost is $52.89 per lineal meter.

ACTIVITY EXAMPLE

Additional Questions

7. Calculate the total cost of the Ridge Cap, Ridge cap costs $32.67 per lineal meter

8. Calculate how many gutter brackets are required, these need to be spaced 0.7 meters apart (Round down to nearest whole number)

9. Calculate the total cost of the gutter required (a) and gutter brackets (b)
   Gutter $41.58 P/M, Brackets $23.20 Each

10. Calculate the total amount of roof fixings required for the Roof, 8 Screws needed per Square Meter of roof (a), Then calculate the cost Each Screw Costs 0.51c (b)

11. Calculate the total cost of Roof, Ridge Cap, Guttering, Gutter Brackets & Roof Screws.

12. Calculate the total cost including GST (15%)

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ACTIVITY EXAMPLE

ANSWERS

1. Using the roof plan, calculate the square meterage of the college roof, Length x Width (the red dotted line is the outside perimeter of the roof with the center ridge cap in the middle)

   31.7m (Length) x 17.5m (Width) = 554.75m2

2. Calculate the length of each side (Roof Profile Sheet Length – From Ridge to Gutter)

   17.5m ÷ 2 = 8.750m

3. Calculate the actual sheet length of roofing iron (x pitch of roof) using the 'Table for Roof Slope' Colum 'Rafter Length'

   15° Pitch = 1.035 x 8.750mm = 9.056m

4. Calculate how many sheets of iron needed.
   Length of roof (Ridge or Gutter) ÷ Roofing Profile Effective Cover (round to highest whole number)

   31.7m ÷ 0.9m = 35.2 Round to 36 Sheets Each Side

   36 x 2 = 72 Sheets Total

5. Calculate how many lineal meters of iron is needed (Total Sheets x Actual Sheet Length)

   72 x 9.056m = 652.030 Lineal Meters (LM)

6. Calculate the total cost of roofing iron, Cost is $52.89 per lineal meter.

   652.030 x $52.89 = $34,485.87

7. Calculate the total cost of the Ridge Cap, Ridge cap costs $32.67 per lineal meter

   31.7m x Cost of Ridge 32.67 = $1035.64

8. Calculate how many gutter brackets are required, these need to be spaced 0.7 meters apart (Round down to nearest whole number)

   31.7m x 2 = 63.4m ÷ 0.7m = 90 Brackets

9. Calculate the total cost of the gutter required (a) and gutter brackets (b)
   Gutter $41.58 P/M, Brackets $23.20 Each

   (a) 31.7m x 2 = 63.4 x $41.58 = $2636.20
   (b) 90 x $23.20 = $2,088.00

10. Calculate the total amount of roof fixings required for the Roof, 8 Screws needed per Square Meter of roof (a), Then calculate the cost Each Screw Costs 0.51c (b)

    (a) 554.75m2 x 8 = 4438
    (b) 4438 x 0.51c = $2263.38

ACTIVITY EXAMPLE

ACTIVITY EXAMPLE

11. Calculate the total cost of Roof, Ridge Cap, Guttering, Gutter Brackets & Roof Screws.

	$34,485.87	Roof
+	$1,035.64	Ridge Cap
+	$2,636.20	Gutter
+	$2,088.00	Gutter Brackets
+	$2,263.38	Roof Screws
=	$42,509.09	Total

12. Calculate the total cost including GST (15%)

$42,509.09 x 1.15

$48,885.45

Roofing Profile — 900mm Effective Cover · Ridge Cap Profile · Gutter Profile · Fixing Detail

Side view of Hall · Side & End view of Hall · Table for Roof Slope
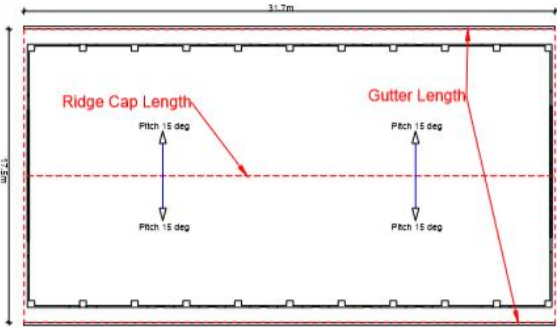
Roof Plan · Cross Section of Gable End
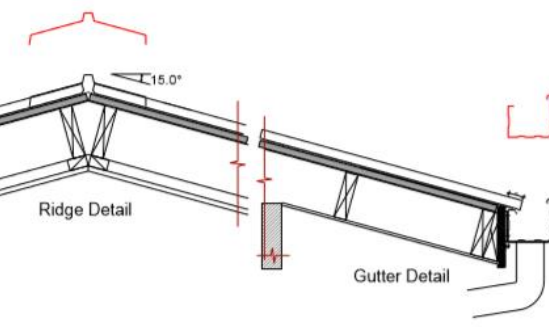
Ridge Cap Length · Gutter Length · Pitch 15 deg · 15.0° · Ridge Detail · Gutter Detail

Comag Limited & Matamata College Work Sheet for SSEP 2018

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