Summer Transition Project

VESPA Mindset	Building Services	Highlands College

You will be required to share your project with your Personal Tutor and class on day one

The Building Services course at Highlands College includes the following topics –

- **SAFE USE OF TOOLS AND EQUIPMENT**
- **RECOGNISING ELECTRICAL AND PLUMBING COMPONENTS**
- **FABRICATION OF PLUMBING PIPEWORK AND ELECTRICAL CIRCUITS**
- **GENERAL MAINTENANCE**
- **MEASUREMENT AND DRAWING**
- **SCIENTIFIC PRINCIPLES ASSOCIATED WITH ELECTRICAL AND PLUMBING**

For this project, you will:
Answer a series of questions relating to research, measuring lengths and volumes and applying it to measuring **surface area** and **capacity/volume.**

You will also be looking at estimating costs, researching health and safety processes and answering questions relating to text
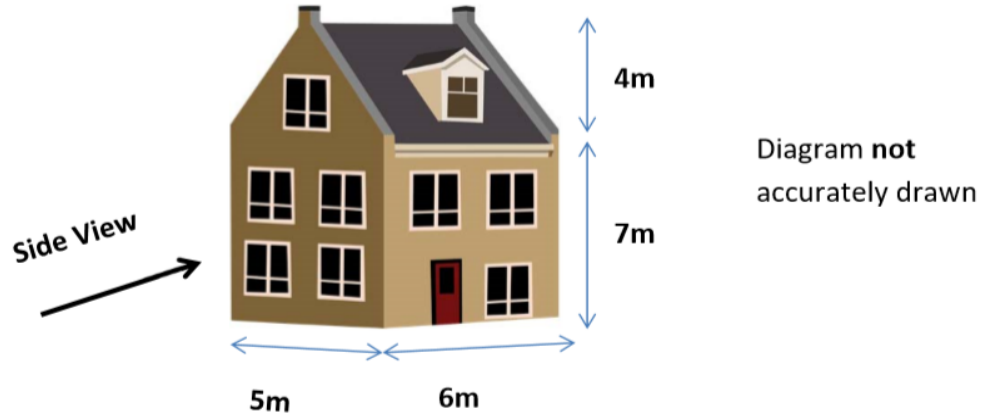
Please write your answers on a separate sheet. The task titles are highlighted in <mark>yellow</mark>

Your project could be presented as a mix of the following:

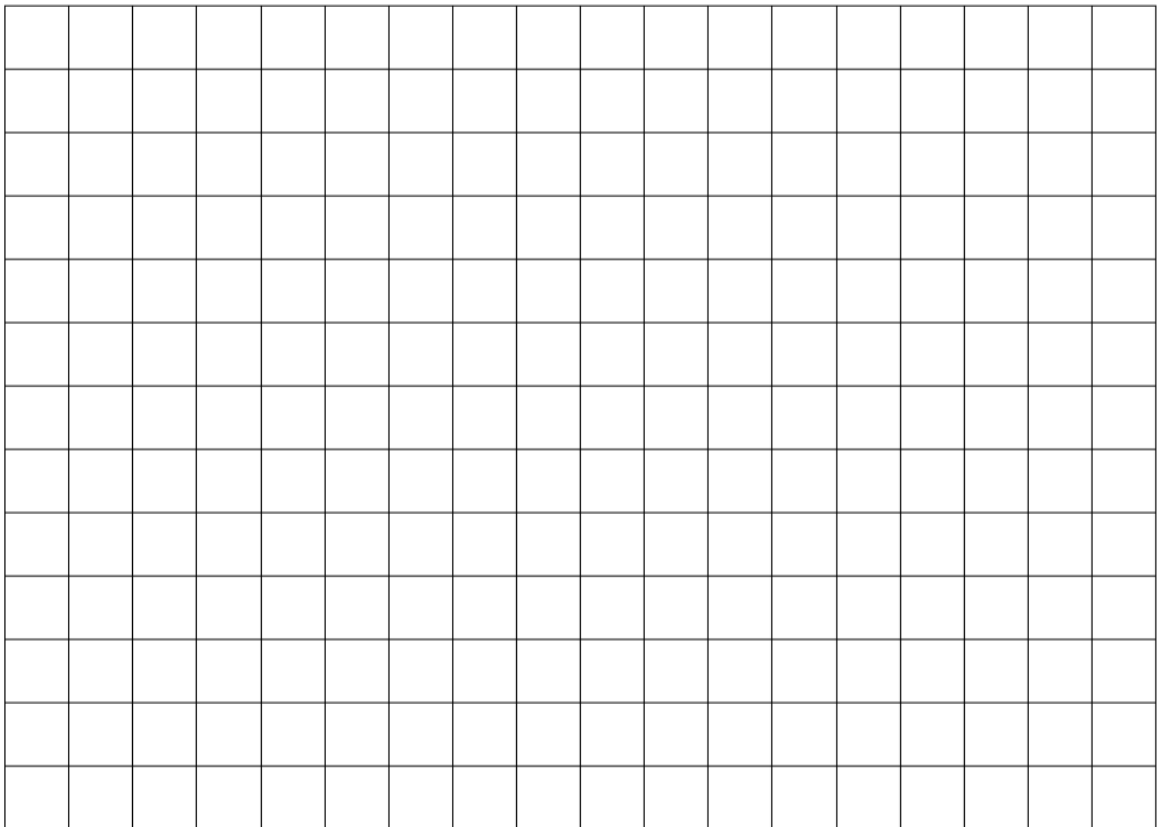- ✓ A PowerPoint presentation
- ✓ Written answers
- ✓ Sketches

1. Yvonne wants to buy a newly built house.
   She finds this picture of the house she wants online.

4m

Diagram **not**
accurately drawn

7m

Side View

5m   6m

Yvonne wants a scale drawing of the side view of the house.

She uses a scale of 1:100

Draw the side view of the house on the grid. Remember to use the scale.

(Each square on this grid measures 1cm x 1cm)

Tools Task

For this task you may need to research the tools

Match the name of the tool to the picture

Carpenters pencil   Mitre block   Pliers   Wooden mallet   Bradawl

Claw hammer   Tenon saw   T-square   Wood chisel   Combination square

Hand countersink   Oil stone block   Hardwood bevel   Roofing square   Chisel

Mortice gauge   Block plane   Hand plane   Marking gauge   Carpenters square

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Materials Task

For this task you may need to research the materials

Match the name of the material to the picture

Breeze block   Marble   Slate   Glass   Plastic   Brick   Stone   Cement block

Steel   Copper   Metal   Wood   Ceramic tile   Plasterboard   Roof felt   PVC

Plaster   Tarmac   Roofing tile   Corrugated sheeting

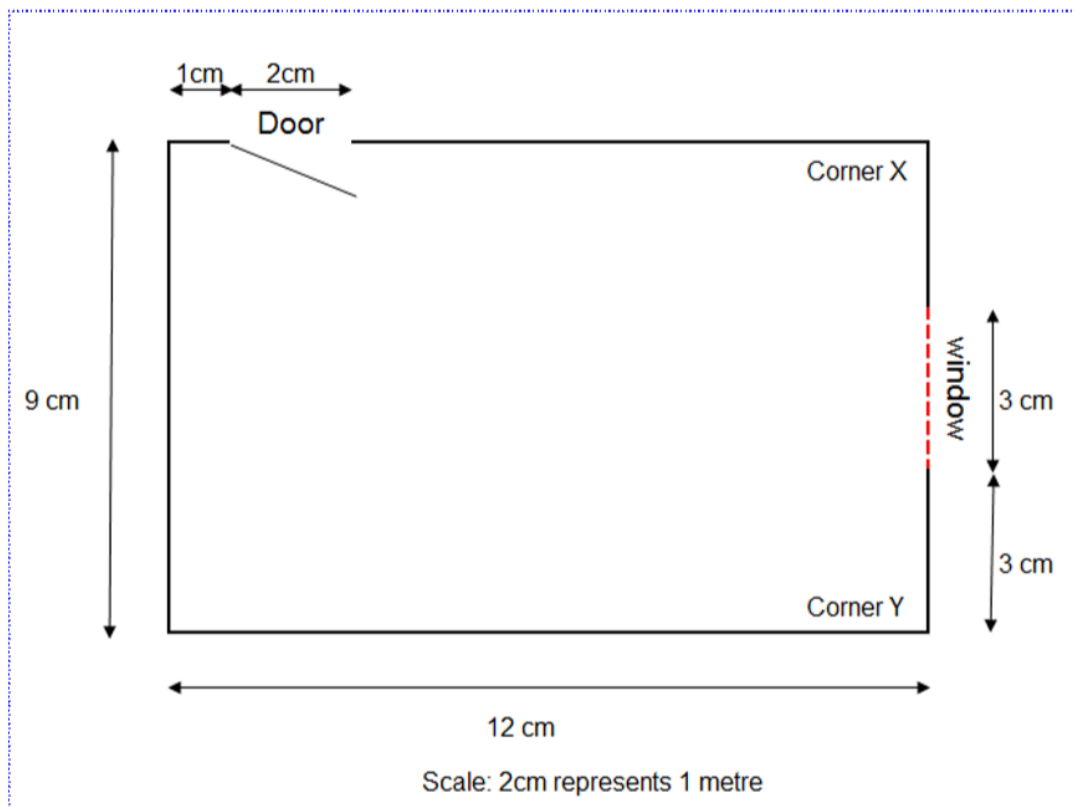| 1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Fitting a Bathroom
The bathroom below needs to be fitted

Find below the drawing of the bathroom (not drawn to scale)

Scale: 2cm represents 1 metre

Use the information on the diagram to answer the questions below:

Task 1

1. What is the actual length and width of the bathroom?

2. The wash hand basin unit (vanity unit) is to be fitted between the door and the corner marked X. How long is this length in the drawing?

3. If the bath tub is 1.7m long and 700mm wide, calculate the area of the bath tub.

4. How much water will you require to fill the bath tub if it is 80cm deep?

Fitting a Bathroom

You must show all your working out and evidence that you have checked your work.

Task 2

Your customer requested a new bathroom suite with the following specifications:

- Bath that is at least 1700mm x 700mm
- Full height pedestal with basin: 800mm high or more
- Lever or Dual flush WC: 650mm x 380mm x 795mm

a) Find the **cheapest** deal for your client from the deals below.
   Explain the reasons for your answers

Model	Price	Special offer	Dimensions (mm)
Falmouth	Super Prices £412.22	**£130 off** when paid for with cash	Bath: 1800 x 700 Basin: 500 (L), 805 (h) Dual flush WC
Vicky	Super Deals £620	**50% off** all Vicky bath suites	Bath: 1700 x 700 Basin: 500 (L), 815 (h) Dual flush WC
Quickline	Mega Deals £578 only	$\frac{1}{5}$ off all bath suites	Bath: 1700 x 700 Basin: 500 (L), 795 (h) Dual flush WC
Price Busters	Mega Cuts £225 only	**Unbeatable prices**	Bath: 1700 x 700 Basin: 500 (L), 695 (h) Dual flush WC
Vantage	Low Prices £550 only	**15% off** on all purchases	Bath: 1650 x 700 Basin: 500 (L), 695 (h) Lever Cistern flush WC

b) Calculate the average price and the range of prices for the listed bathroom suites.

Britain's brickies build a fortune

By Lucy Jones BBC News Online Thursday, 22 April, 2004, 07:20 GMT 08:20 UK
http://news.bbc.co.uk/1/hi/business/3643673.stm

At the age of 17, Jonathan Hill from Middlesex is eyeing a salary of at least £55,000 a year.

He is not a stock broker, brain surgeon or lawyer. But he is **learning** a skill which is just as **lucrative** in today's market - bricklaying.

Qualified construction workers are in huge demand in Britain. In the south-east, where the building of Terminal 5 at Heathrow airport is **attracting** builders from across the world, they are almost impossible to find for a reasonable price.

Jonathan Hill hopes to get work at Terminal 5

As with computer programmers amid the millennium bug worries in the run up to 31 December 2000, the most highly-skilled builders are demanding bumper salaries.

"With the building of Terminal 5, the **prospects** are really good," Mr Hill admits. "I've always had an interest in the construction industry. My dad earns a fair bit from it."

Job creation

Terminal 5 - to cost $6bn - is one of the biggest construction projects in Europe. It will boast 110 aircraft stands, 40,000 car parking spaces, 18 conveyor belts, the tallest control tower in the country and hundreds of shops by the time it is completed in 2011.

New roads and rail links will serve the terminal which is set to house British Airways' **entire** Heathrow operation.

In the process, more than 50,000 people will have been provided with well-paid jobs for the best part of a **decade.** But at present there is an **expertise** shortage.

Construction at the terminal is well underway

This has led BAA, the company that operates Heathrow, to join the Learning and Skills Council (LSC) - a government body - to set up the Heathrow Construction Centre to train young people carpentry, joinery and bricklaying.

Onsite training

The centre, which officially opens on Thursday, has would-be recruits knocking on the doors: more than 250 people applied for 50 places last year

There are now 80 16-to-18-year-olds training at the centre, which plans to expand. Young people see there is good money, if they've got the right skills," says David Boyer from the LSC. "Many 16-year-olds look around and don't see anything they want to do and so are falling out of education.

Britain's brickies build a fortune

"The key is finding something that young people want to do but that employees will pay for." Construction fits the bill perfectly, he says.

Although students do have to attend lectures, most of their learning takes place in a workshop. "It's not like being in school... there's a level of **maturity**," says Mr Hill.

The apprentices like being outside the classroom

Caravan sites

The Terminal 5 project has its **critics**. Local people fear extra noise and pollution from the aeroplanes flying overhead, although the jobs the project is **generating** locally is widely seen as a pay-off.

But news of the riches to be made at Terminal 5 is spreading quickly. Caravan sites housing the builders who have come from as far away as Russia and Finland have sprung up near the terminal site.

Workers from far away live in caravans

The conditions are basic and cold in winter: the toilets and showers are located in cabins outside. But the Mercedes and BMW cars parked outside the caravans are evidence of why people are coming.

"It's definitely worth it - even unskilled workers are getting between £700 and £1,000 a week," said one resident of the Wiggin's site who left behind her house and children in Essex to join her husband, a builder on Terminal 5.

"The aeroplanes **interfere** with the television and a few people have had their caravans nicked but I'm happy."

The airport authorities are taking steps ensure Terminal 5 employs locals. Many students at the Heathrow Construction Centre live nearby.

> 66 I've talked to a lot of the kids here... they all have a game plan. They want to set up their own businesses with the money they earn from working on Terminal 5 99
>
> Mick Temple, Heathrow Airport

"Clearly the more Terminal 5 benefits the local community, the better," says Mick Temple, managing director of Heathrow Airport. "They don't want to see that there are benefits but they are going to someone else."

There is hope the project could benefit the area for many years to come. "I've talked to a lot of the kids here... they all have a game plan. They want to set up their own businesses with the money they earn from working on Terminal 5."

That may mean more builders in future but in the short-term bricklayers are going to be increasingly hard to come by.

Read the article on pages 1 and 2

Now answer the following questions

1. What type of text is this?

2. How much is Terminal 5 set to cost?

3. List six things that Terminal 5 will have?

4. How many people would have been provided with well-paid jobs in Terminal 5?

5. Which two companies are setting up a training centre at Heathrow; and what type of training do they intend to provide?

6. What phrase tells us what Jonathan Hill thinks about the training centre?

7. What do the local people think about Terminal 5?

8. What are the caravan sites used for and where do the people come from?

9. What is the average salary for unskilled workers?

10. The airport authorities are working with the locals to provide what? Which phrase tells us this?

Health and Safety

You may need to research the signs

Do you know what the signs below mean?
Write the meaning of each sign in the space next to it.

Prohibitory signs - a sign prohibiting behaviour likely to increase or cause danger (e.g. smoking)
- round shape
- black pictogram on white background, red edging and diagonal line (the red part to take up at least 35% of the area of the sign)

_____

_____

_____

_____

_____

_____

Warning sign - a sign giving warning of a hazard or danger (eg danger: electricity)

- triangular shape
- black picture with at least 50% yellow background

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Diana has a loft in her house that she wants to convert into a bedroom. She finds out all the costs.

Building work	£13500
Fitted wardrobe	£475
Bedroom Furniture	£600
Decoration	£250

1. **Calculate the total cost.**

2. Diana wants to pay less for the building work.
   The builder offers her 10% discount on the £13500 cost. **How much is the discount?**

3. Diana has a plan of the floor in the new bedroom.
   She shades the space where she cannot put more furniture.

   Diana wants to put a rug, a fitted wardrobe and a TV cabinet into the new bedroom.
   The wardrobe needs:
   - to be fitted against a wall.
   - a rectangular floor space of 100cm by 250cm (depth x width).
   - to be at least 50cm from the bed.

   The TV cabinet:
   - needs a rectangular floor space of 100cm by 50cm.
   - must not be against a wall or any furniture.

   Draw a fitted wardrobe and TV cabinet on the plan on page 2.
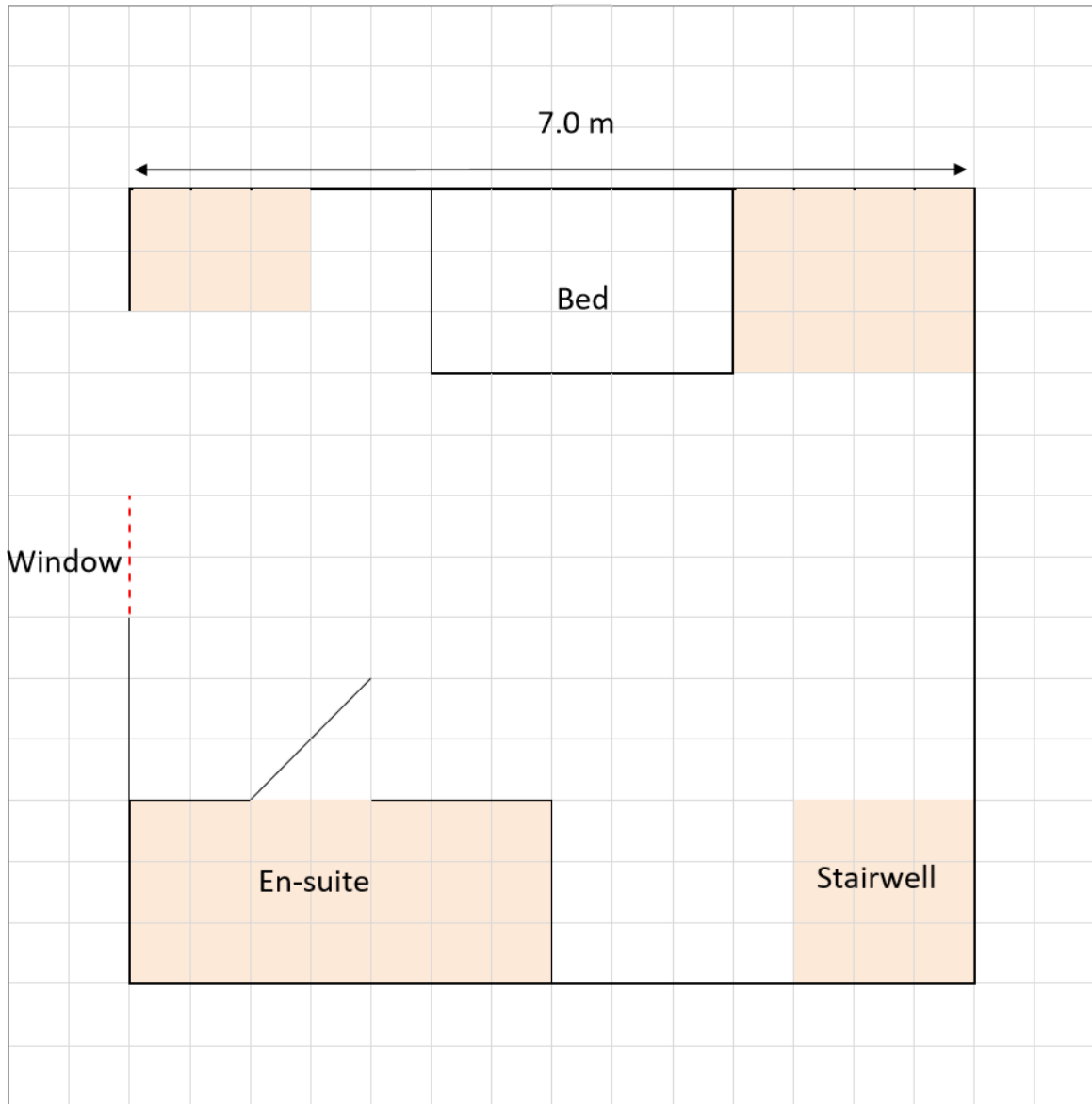
4. Diana wants to put a rug on the floor in the new bedroom. She wants a rectangular rug with a maximum size of 2m by 1m. She finds these rugs.
   a. **List the rugs she could buy.**

Rug	Width	Length
Rose	75cm	150cm
Pansy	120cm	180cm
Mint	150cm	150cm
Dill	140cm	200cm
Ivy	80cm	120cm

b. From <u>your</u> list, **choose the rug with the largest area. Draw it on the plan making sure it is at least 50cm from any wall or furniture. Label it clearly with the correct name.**

Plan of Loft

7.0 m

Bed

Window

En-suite

Stairwell

4c. **Complete this information about the scale plan.**

i. One square on the plan represents an actual space of _____cm x _____ cm.

ii. The en-suite bathroom will be _____m long and _____ m wide.

iii. The total area of the rectangular loft space is: _____ m^2.

Building a wall

Bricks per m^2 = 60

Your task is to work out the cost of bricks for building a brick wall.

First decide on the length and the height of your wall.

Then work out the area of the wall.
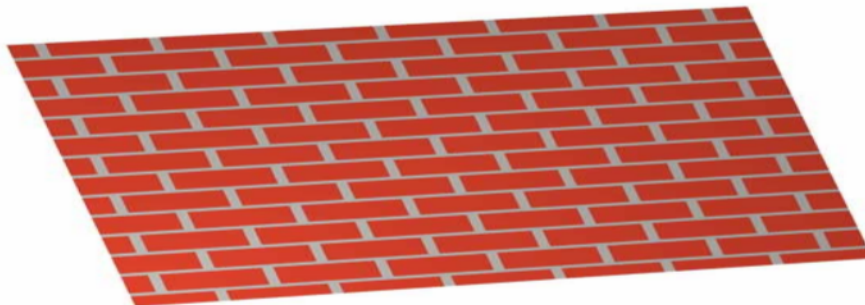Remember AREA = BASE x HEIGHT

Then calculate how many bricks you will need.

It is good practice to add on an extra amount to allow for wastage. The usual allowance is 5%.

Next, search the internet for your materials. Print off details.

Work out the cost of the bricks for building your wall.

Finally, draw a scale diagram of your wall.

Repainting a ceiling

Your task is to work out the cost of repainting a ceiling.
Choose one of the training rooms (or your classroom).

First you will need to work out the area of the ceiling in question.

You need to allow for 2 coats of paint.

Next, find a website quoting the price for a tin of emulsion paint.
Print off details.

A litre of paint will allow for approximately 12m of coverage.
You will need to work out the cost of painting just 1m².

Remember to show a way of checking your answer.

Finally, draw a scale diagram of the chosen room.