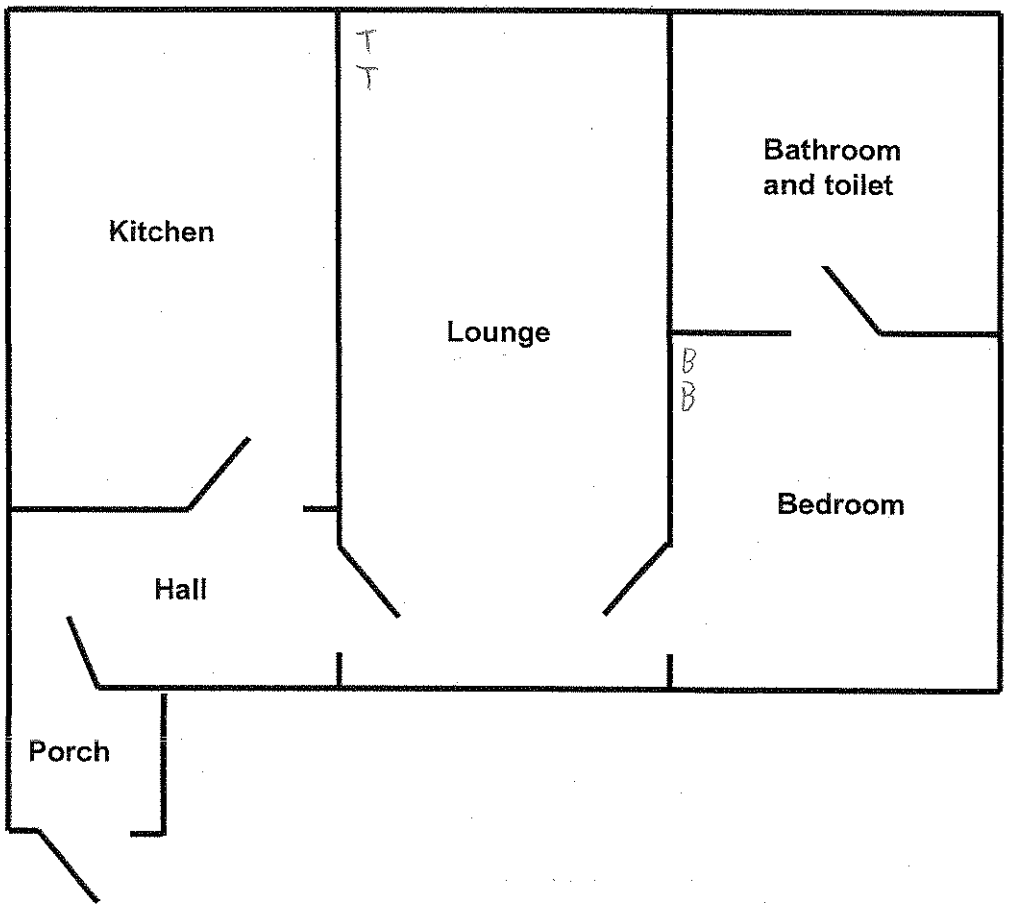
16/16 A

Planning sheet

Any work on this sheet will not be directly marked, but may be used to contribute to the examiner's understanding of your answer.

Level 1 Task

When Emma goes to college, she is going to live in a student flat.
This is the floor plan of the flat.



Floor plan
NOT TO
SCALE

Each room and the porch have a centre light. There are two table lamps in the lounge and two bedside lights in the bedroom. All the bulbs in the flat are conventional light bulbs.

Emma plans to replace the conventional light bulbs with energy saving bulbs.

(a) Use the table to make a list of conventional bulbs that Emma needs for her flat.

Conventional bulb (Watts)	General use
40	Child's bedside light that might be left on at night.
60	Bedside reading light, wall light.
100	Table lamp, centre light
150	Large standard lamp.

6 centre lights = 600 watts

2 bedside lights = 120 watts

2 table lamps = 200 watts

600+120+200=920 watts overall

2 (RC)

[2]

RT

This table shows the energy saving bulbs that can be used to replace conventional bulbs.

Conventional bulb (Watts)	Energy saving bulb (Watts)
40	10
60	15 - 18
100	20 - 25
150	32

(b) List the energy saving bulbs that Emma needs to replace her conventional bulbs.

2 X 15 to 18 wattage bulbs

6 X 20 to 25 wattage bulbs

2 X 20 to 25 wattage bulbs

overall watts = 236 watts max + 190 watts min 2 (RF)

[2]

(c) Emma thinks that she can save over 700W of power by replacing the conventional bulbs with energy saving bulbs. Is she right?

Conventional bulbs = 920 watts altogether 2(RT)

energy-saving lightbulbs give off a minimum of 190 watts, and a maximum of 236 watts.

920 − 190 = 730 watts, meaning Emma will save more if she uses the minimum amount of wattage 2(RI) 2(AI) 2(AT)

920 − 236 = 684 watts. If she uses the maximum amount of wattage, she will not save 700w if she switches to energy-saving bulbs. 2(IT) 2(II)

[12]

Credit will be given for well organised work, where you make clear the method and calculations you have used in your answers.