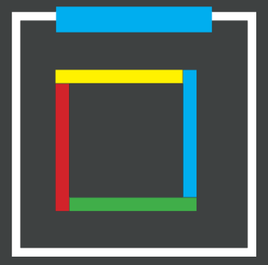
PRE-WORKSHOP



A QUIZ OF BUILDING PHYSICS IN ENVIRONMENTAL DESIGN

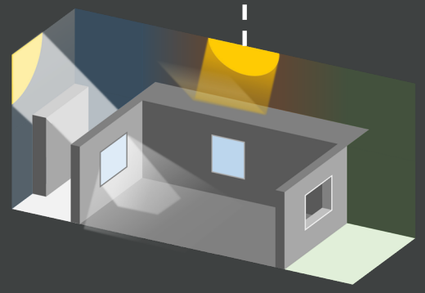
START

THIS QUIZ AIMS TO UNDERSTAND HOW MUCH OF THE BUILDING PHYSICS IN ENVIRONMENTAL DESIGN COVERED HERE IS FAMILIAR TO THE BUILDING DESIGNERS. THIS QUIZ IS LINKED WITH THE PROJECT OF ROOM, AN OPEN-ACCESS WEB PLATFORM FOR INTERACTING WITH BUILDING PHYSICS.

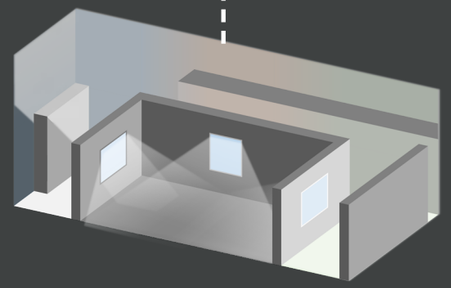
NEXT PAGE

ABOUT THIS QUIZ

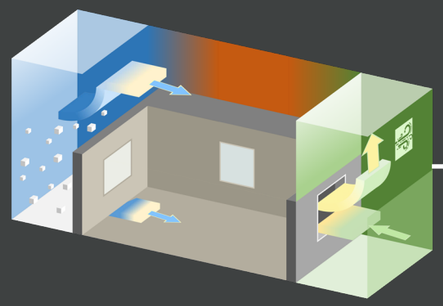
8 QUESTIONS, 4 PAGES ON THE FOLLOWING 4 TOPICS



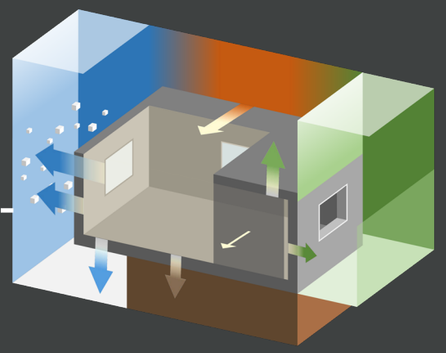
SOLAR ACCESS (Q1, Q2)



DAYLIGHT ACCESS (Q3, Q4)



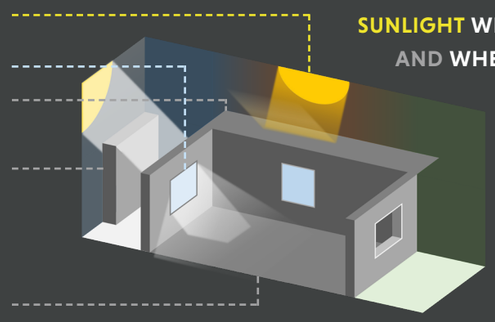
NATURAL VENTILATION (Q5, Q6)



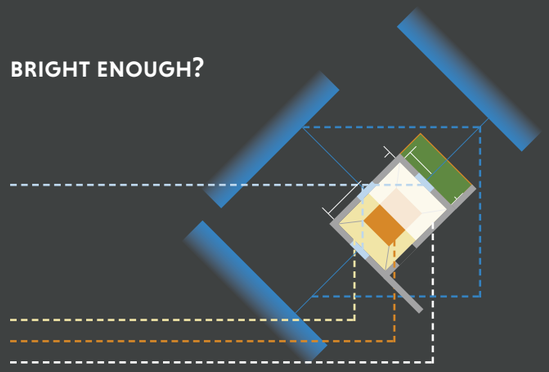
FABRIC HEAT TRANSFER (Q7, Q8)

ON EACH TOPIC

1ST QUESTION ASKS YOU TO LIST THE INFORMATION THAT YOU NEED, TO UNDERSTAND THIS ASPECT OF A ROOM'S ENVIRONMENT



2ND QUESTION ASKS YOU TO MAKE A JUDGEMENT ON THIS ASPECT OF THE ROOM'S ENVIRONMENT BASED ON THE INFORMATION PROVIDED



ABOUT YOU

STUDYING WORKING

ARE YOU  OR  ?

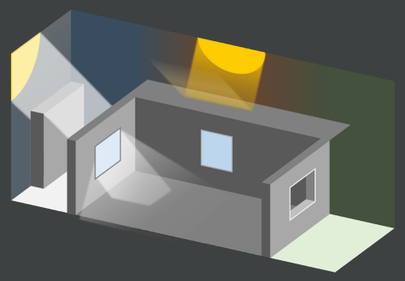
IN WHICH SUBJECT:

AS A:

YEARS OF STUDY:

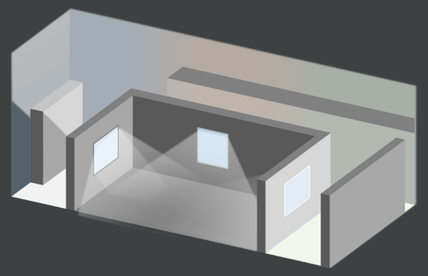
YEARS IN THE INDUSRTY:

ARE YOU INTERESTED IN THE TOPICS COVERED IN THIS QUIZ?



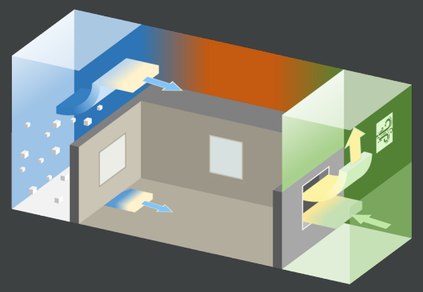
SOLAR ACCESS

NO
A BIT
QUITE
VERY



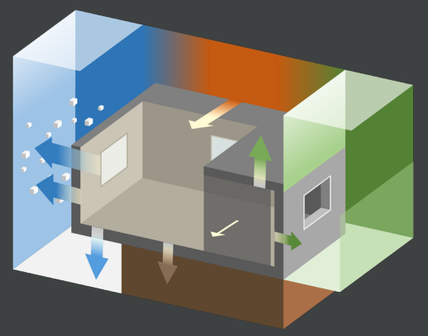
DAYLIGHT ACCESS

NO
A BIT
QUITE
VERY



NATURAL VENTILATION

NO
A BIT
QUITE
VERY



FABRIC HEAT TRANSFER

NO
A BIT
QUITE
VERY

PREVIOUS PAGE

NEXT PAGE

BEFORE THE QUESTIONS

PREVIOUS PAGE

NEXT PAGE

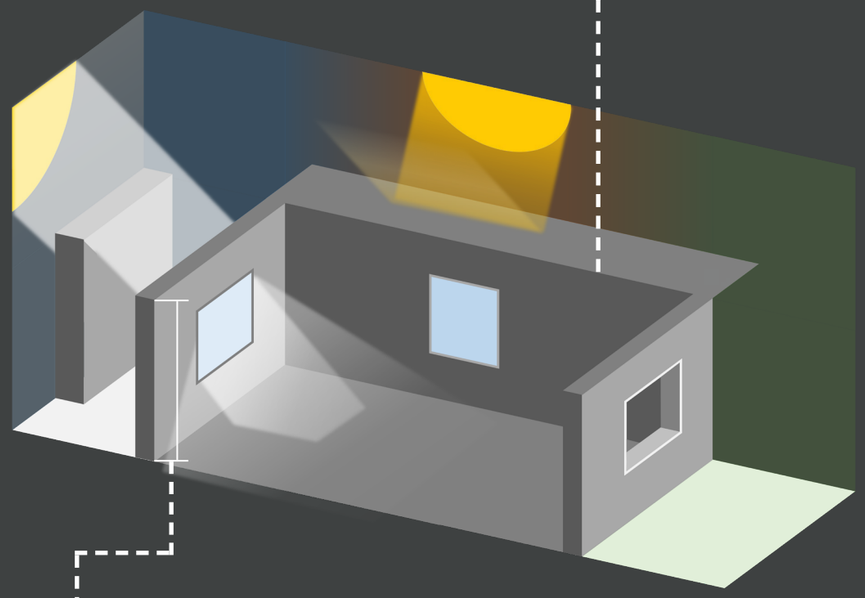
YOU ARE FREE TO CONSULT ANY RESOURCES TO ANSWER THE QUESTIONS, BUT PLEASE KEEP DISCUSSION TO MINIMUM AND GIVE YOUR OWN ANSWER.

READY?

SOLAR ACCESS

01

You are designing a **HOUSE** in **BATH**, a city in the **SOUTHWEST** of **UK**, and you are reviewing the **SOLAR** access of a **LIVING-DINING ROOM**.



FLOOR-TO-CEILING HEIGHT = 3.0M

NORTH

45º

WINDOW DIMENSIONS:
FOR ALL THREE WINDOWS

CILL HEIGHT = 0.8M

WINDOW WIDTH = 2M

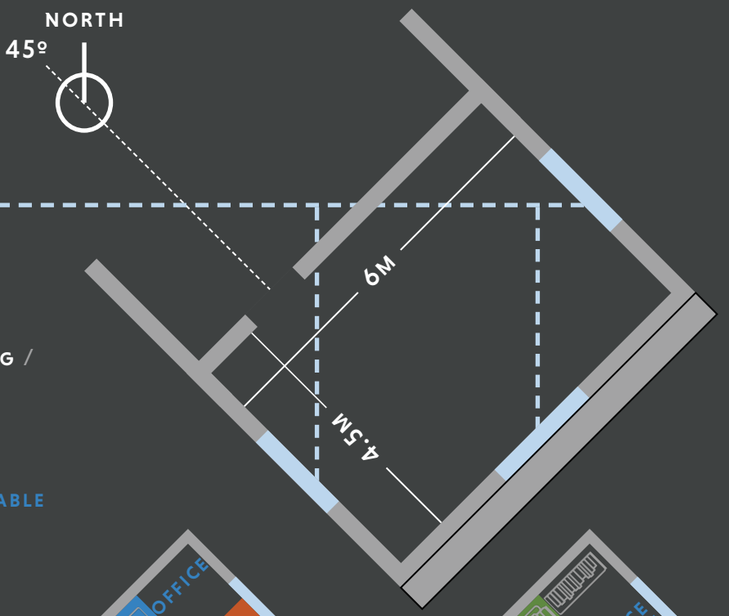
WINDOW HEIGHT = 1.5M

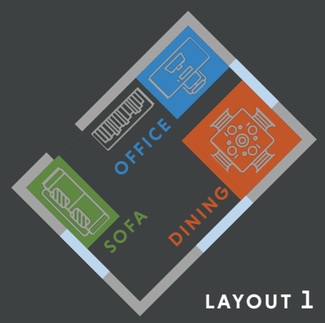
CLIENT'S REQUIREMENTS:

HAVE **SUN** NEAR THE **SOFA** IN **MORNING** / **NOON**, INCLUDING WINTER

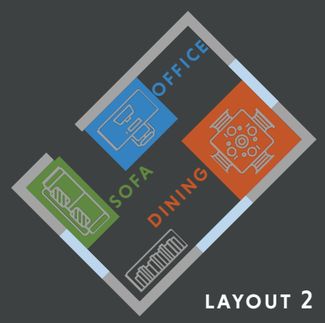
HAVE **SUN** OVER THE **DINING AREA** IN **LUNCH TIME** / **AFTERNOON**, ALL YEAR

NO / LOW DIRECT **SUN** NEAR **OFFICE TABLE**

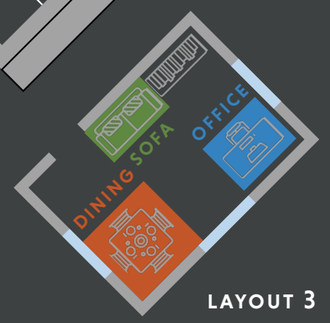




LAYOUT 1



LAYOUT 2



LAYOUT 3

Q1: In winter and in summer, to tell **WHEN IN A DAY** and **WHERE INSIDE THE ROOM** **SUNLIGHT** can reach, which **INFORMATION** do you need to know **ABOUT** the **CITY**, the **SITE CONTEXT**, and the **ROOM**? Please list them below (**SEPARATE** each information **WITH A COMMA**):

You are deciding the **LAYOUT** of this **LIVING-DINING ROOM**.

Q2: Use the information on the left, **WHICH LAYOUT** would you choose, that would **MEET** the **CLIENT'S REQUIREMENTS**?

LAYOUT 1: ○ **LAYOUT 2:** ○ **LAYOUT 3:** ○

How **CONFIDENT** you are: **LOW** 1 - ○ 2 - ○ 3 - ○ 4 - ○ 5 - ○ **HIGH**

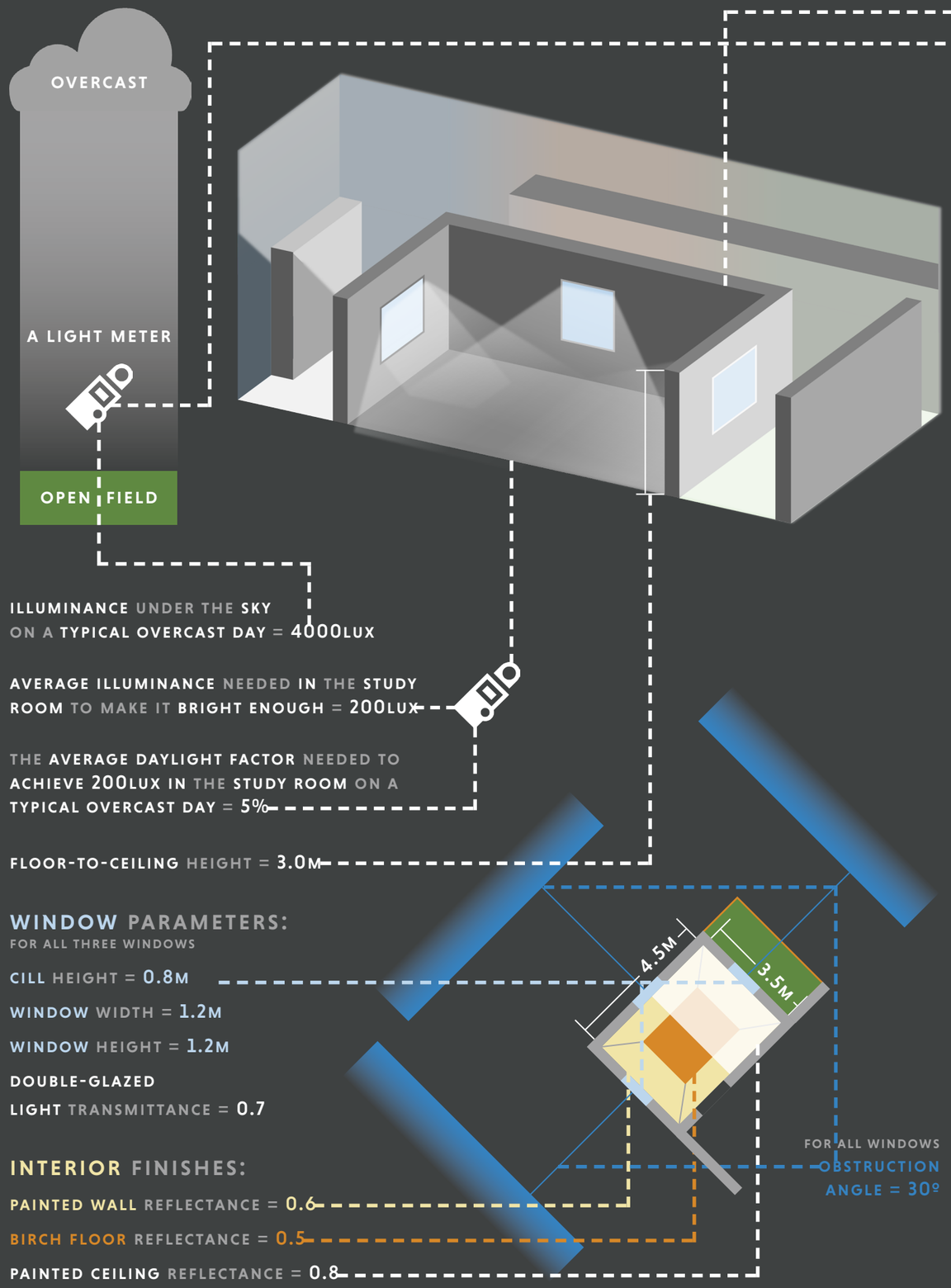
Please briefly **EXPLAINE** your choice:

PREVIOUS PAGE

NEXT PAGE

DAYLIGHT ACCESS

02



You are reviewing the daylight access of a study room on the first floor of the same house in Bath, UK.

Q3: On a typical overcast day, knowing how bright it is under the sky in an open field, which characters and properties of the site context, the room, and its elements do you need, to tell how bright it is inside the room? Please list them below (separate with comma):

You are checking if the study room is generally bright enough with only daylight on a typical overcast day.

Q4: Use the information on the left, would you expect the study room to be bright enough?

Bright enough: ○ Not bright enough: ○

How confident you are: Low 1 - ○ 2 - ○ 3 - ○ 4 - ○ 5 - ○ High

Please briefly explaine your choice:

PREVIOUS PAGE

NEXT PAGE

NATURAL VENTILATION

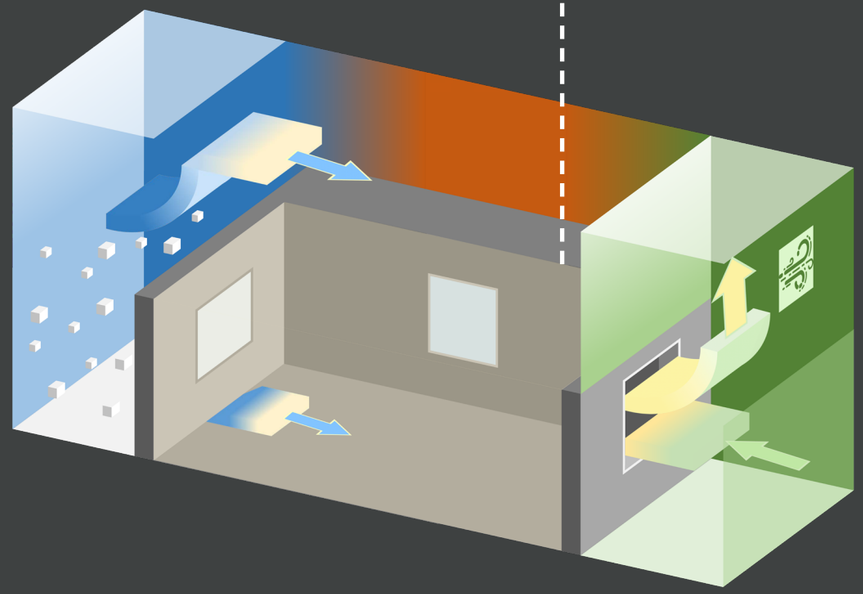
03

THE HOUSE IS VENTILATED NATURALLY, AND YOU ARE CHECKING IF THE OPENINGS YOU PROVIDED FOR THE LIVING-DINING ROOM ARE SUITABLE.

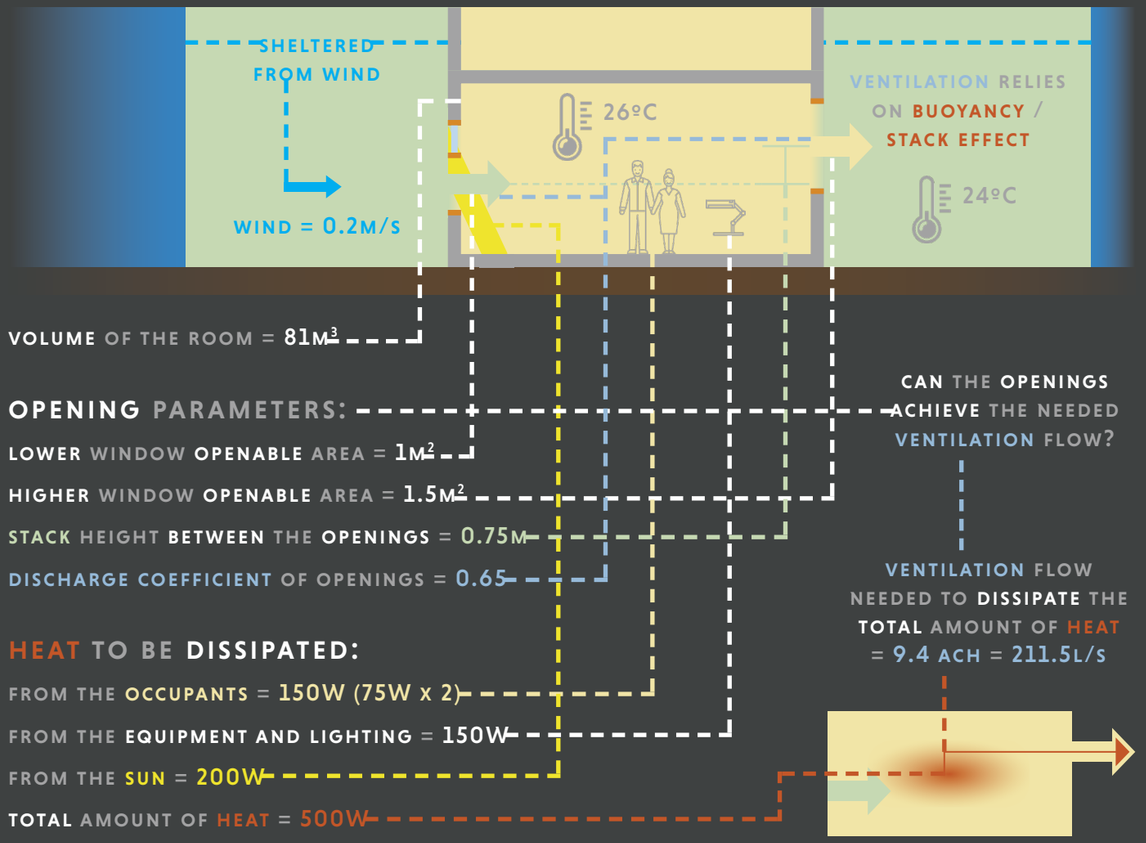
5 - 10 ºC

TWO OCCUPANTS

18 - 24 ºC



Q5: IN WINTER, THE OCCUPANTS KEEP MOST WINDOWS SHUT AND ONLY OPEN ONE SIDE WINDOW TO GET FRESH AIR. WHICH INFORMATION DO YOU NEED ABOUT THE ROOM AND THE OCCUPANTS TO ESTIMATE HOW MUCH FRESH AIR THEY NEED? PLEASE LIST THEM BELOW AND BRIEFLY DESCRIBE HOW YOU WOULD ESTIMATE THE AMOUNT OF FRESH AIR THEY NEED IN ONE HOUR:



ON THE WARM DAYS IN SUMMER, THEY OPEN ALL OPENABLE WINDOWS TO MAKE THE ROOM COOLER.

Q6: USE THE INFORMATION ON THE LEFT, WOULD YOU EXPECT THE VENTILATION TO BE SUFFICIENT TO DISSIPATE THE HEAT FROM THE ROOM?

SUFFICIENT: ○ NOT SUFFICIENT: ○

HOW CONFIDENT YOU ARE: LOW 1 - ○ 2 - ○ 3 - ○ 4 - ○ 5 - ○ HIGH

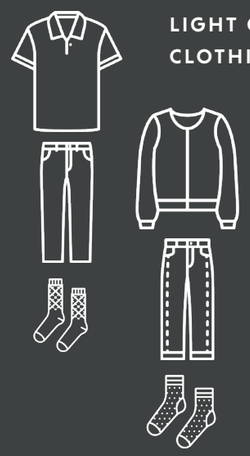
PLEASE BRIEFLY EXPLAINE YOUR CHOICE:

PREVIOUS PAGE

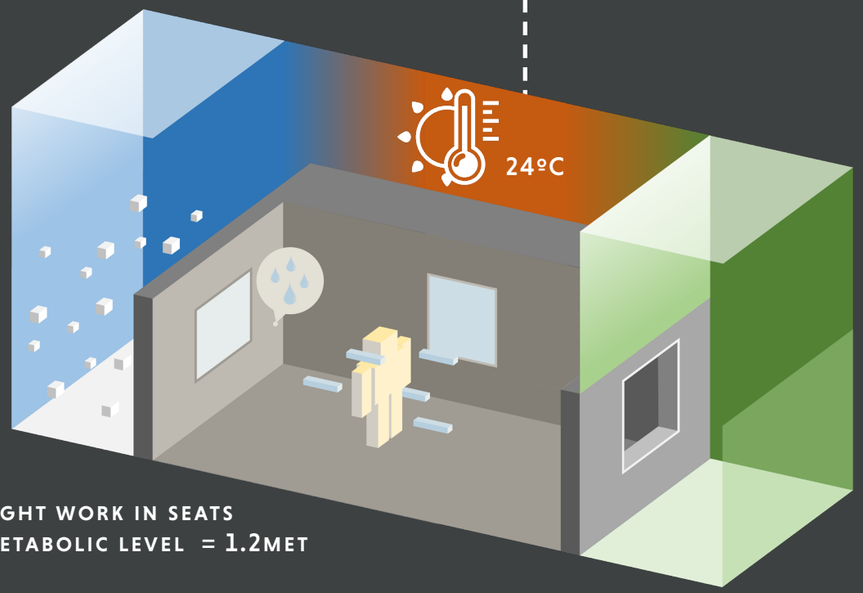
NEXT PAGE

THERMAL COMFORT

04



LIGHT CLOTHING
CLOTHING INSULATION = 0.6CLO

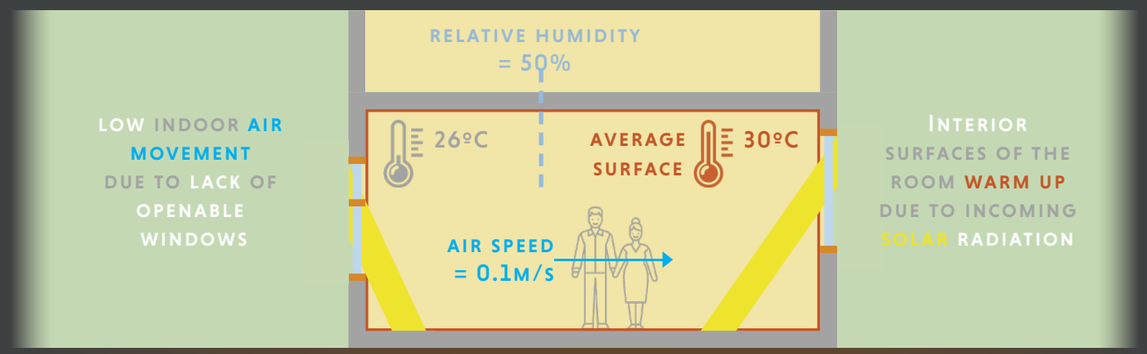


LIGHT WORK IN SEATS
METABOLIC LEVEL = 1.2MET

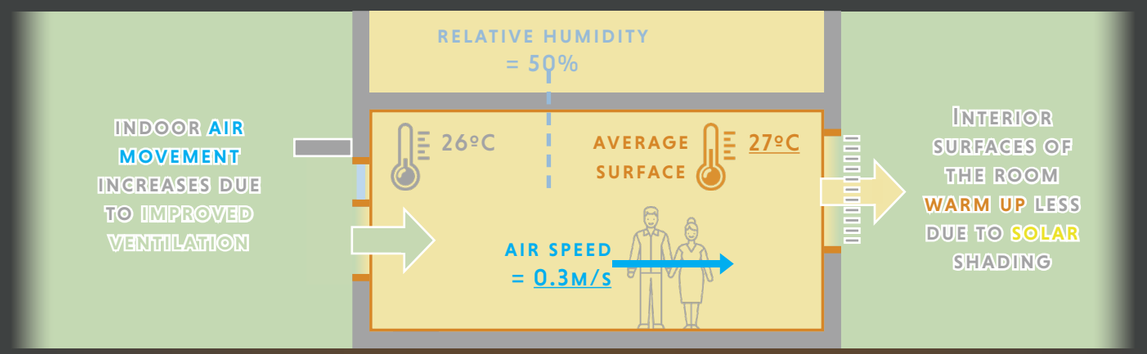
You are investigating the **THERMAL** comfort of the occupants in the **STUDY ROOM** during the **WARM SUMMER** days of UK.

Q7: Knowing the **INDOOR** air temperature and what kind of **ACTIVITY** the occupants undertake in the room, to **TELL HOW COMFORTABLE** they would be with the **CLOTHES** they currently wear, which other **INFORMATION** about the **INDOOR ENVIRONMENT** do you need to know? Please list them below:

NO SOLAR SHADING AND LOW AIR MOVEMENT - OVERHEATING PMV = 1.12 PPD = 31.4%



SOLAR SHADING AND VENTILATION APPLIED - COMFORTABLE? PMV < 0.5 PPD < 10% IS CONSIDERED COMFORTABLE



You are checking **IF** the **SOLAR SHADING** and **VENTILATION** applied **FOR** dealing with **OVERHEATING** are **EFFECTIVE**.

Q8: Use the information on the left, **WOULD** you expect the occupants **TO FEEL COMFORTABLE**?

COMFORTABLE: ○ **STILL TOO WARM:** ○

How **CONFIDENT** you are: **LOW** 1 - ○ 2 - ○ 3 - ○ 4 - ○ 5 - ○ **HIGH**

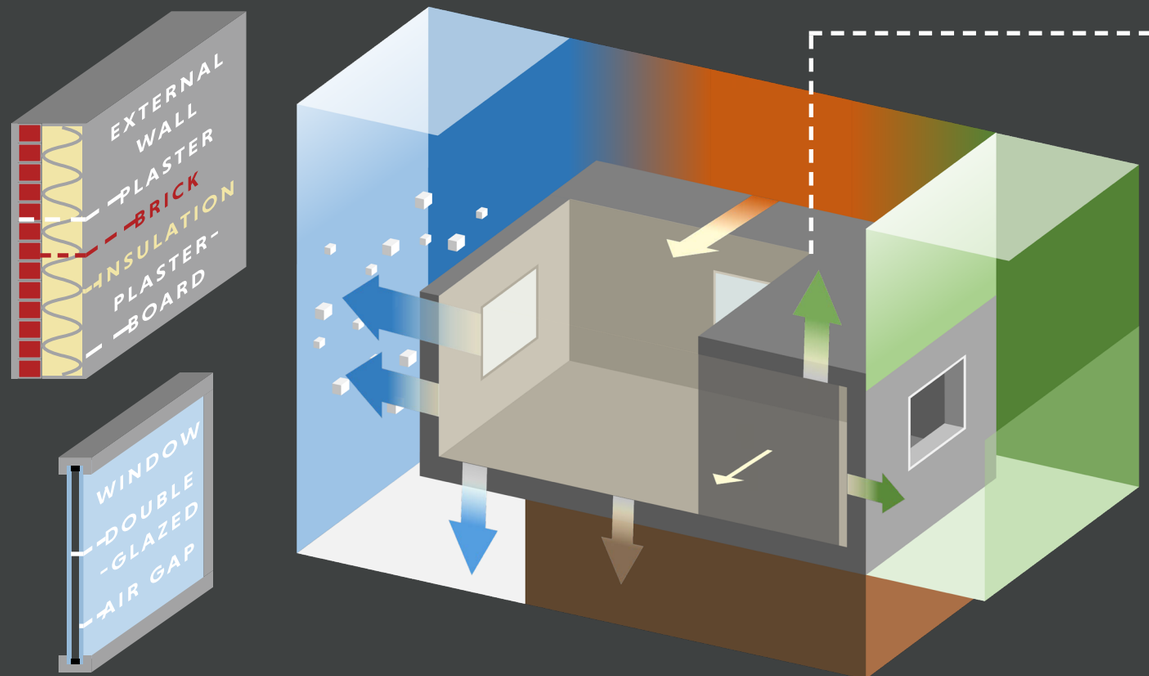
Please briefly **EXPLAINE** your choice:

PREVIOUS PAGE

NEXT PAGE

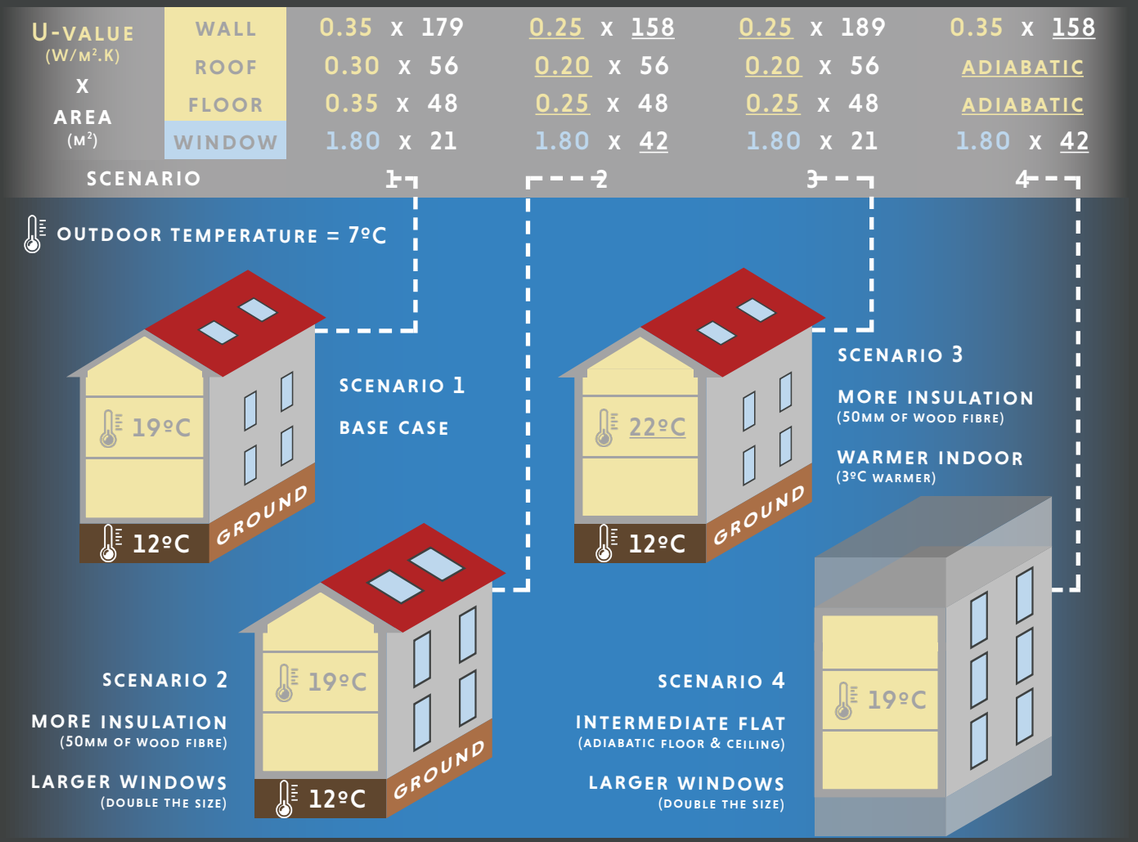
FABRIC HEAT TRANSFER

05



YOU ARE CHECKING THE HEAT LOSS THROUGH THE BUILDING FABRICS OF THE HOUSE IN WINTER.

Q9: KNOWING THE INDOOR AND OUTDOOR AIR TEMPERATURE, WHICH CHARACTERS AND PROPERTIES OF AN EXTERNAL WALL AND A WINDOW DO YOU NEED, TO ESTIMATE HOW MUCH HEAT EACH OF THEM LOSE? PLEASE LIST THEM BELOW AND BRIEFLY DESCRIBE HOW YOU WOULD USE THOSE PARAMETERS TO CALCULATE THE HEAT LOSS RATE:



YOU ARE COMPARING THE TOTAL FABRIC HEAT LOSS OF FOUR SCENARIOS.

Q10: USE THE INFORMATION ON THE LEFT, WHICH SCENARIO WOULD GIVE THE LOWEST TOTAL FABRIC HEAT LOSS?

SCENARIO 1: ○ SCENARIO 2: ○ SCENARIO 3: ○ SCENARIO 4: ○

HOW CONFIDENT YOU ARE: LOW 1 - ○ 2 - ○ 3 - ○ 4 - ○ 5 - ○ HIGH

PLEASE BRIEFLY EXPLAINE YOUR CHOICE:

BACK TO QUIZ

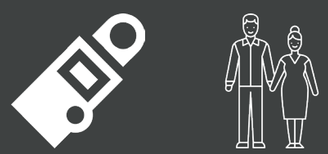
WE WANT TO HEAR YOUR SAY

ANY QUESTIONS?

ANY THOUGHTS TO SHARE?

ANY OTHER FEEDBACKS?

ICONS USED IN THE QUIZ



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