

**A QUIZ OF BUILDING PHYSICS
IN ENVIRONMENTAL DESIGN**

ABOUT YOUR WORKSHOP

Do YOU FEEL ENGAGED DURING THE WORKSHOP ?

NO 1- 2- 3- 4- 5- YES

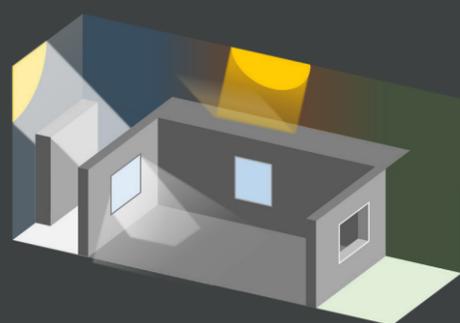
ARE THE CONTENTS COVERED IN THE WORKSHOP USEFUL TO YOU ?

NO 1- 2- 3- 4- 5- YES

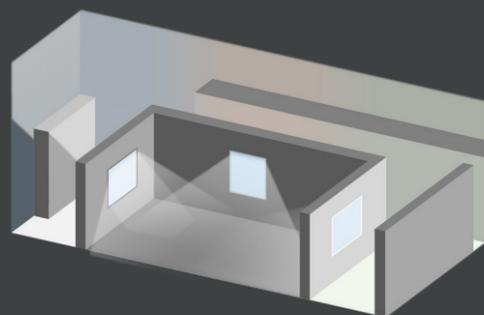
ARE YOU INTERESTED TO HAVE MORE WORKSHOPS USING ROOM ?

NO 1- 2- 3- 4- 5- YES

HAVE YOU LEARNT ANYTHING NEW ABOUT THE FOLLOWING TOPICS ?

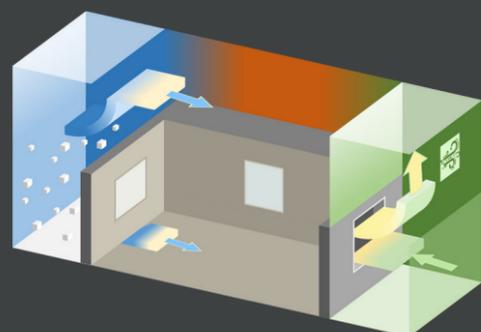


NO
A BIT
SOME
A LOT

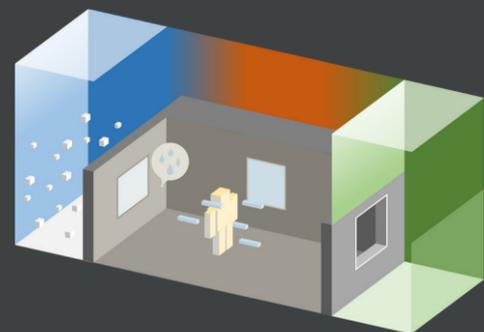


DAYLIGHT ACCESS

NO
A BIT
SOME
A LOT



NO
A BIT
SOME
A LOT



THERMAL COMFORT

NO
A BIT
SOME
A LOT

NATURAL VENTILATION

ABOUT YOUR EXPERIENCE WITH ROOM

IS IT EASY FOR YOU TO USE ROOM ?

NO 1- 2- 3- 4- 5- YES

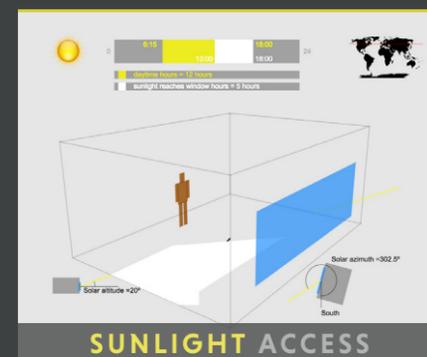
ARE YOU SATISFIED WITH THE FUNCTIONS YOU HAVE USED IN ROOM ?

NO 1- 2- 3- 4- 5- YES

WOULD YOU CONSIDER ROOM A USEFUL TOOL FOR WHAT YOU ARE STUDYING ?

NO 1- 2- 3- 4- 5- YES

HOW DO YOU THINK OF THE INTERACTIVE DISPLAYS ON THE FOLLOWING TOPICS ?



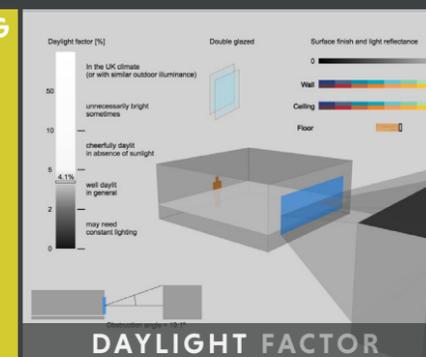
SUNLIGHT ACCESS

CONFUSING



CLEAR

DULL → INTERESTING



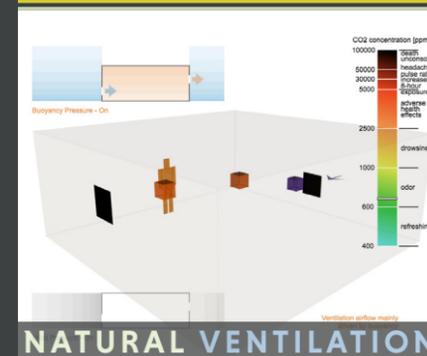
DAYLIGHT FACTOR

CONFUSING



CLEAR

DULL → INTERESTING



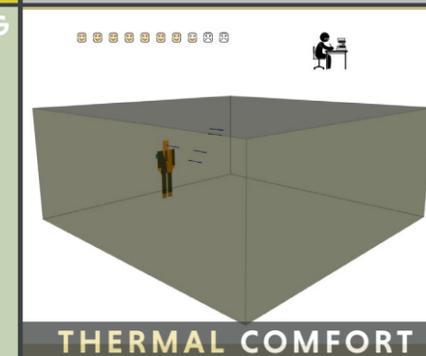
NATURAL VENTILATION

CONFUSING



CLEAR

DULL → INTERESTING



THERMAL COMFORT

CONFUSING



CLEAR

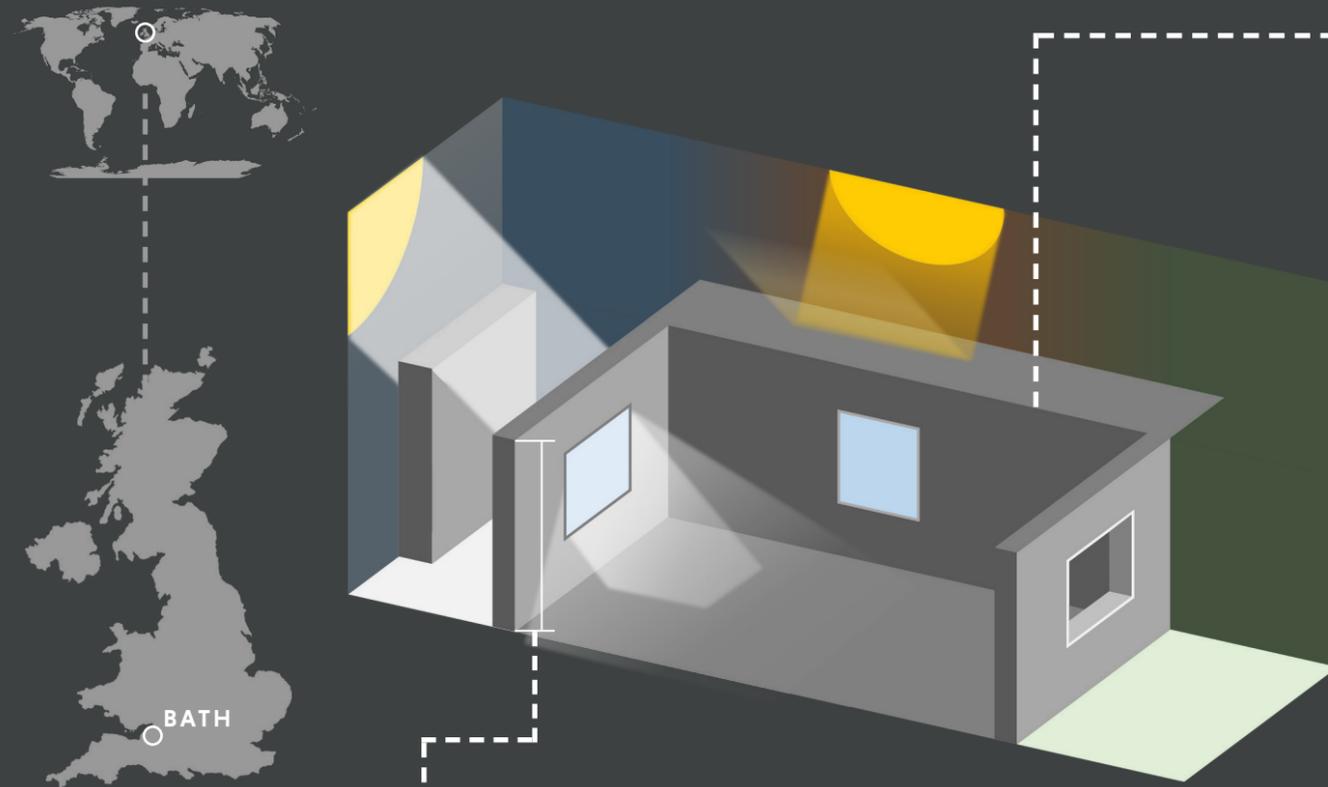
DULL → INTERESTING

BEFORE THE QUESTIONS

THE QUESTIONS WILL BE THE SAME AS IN THE PREVIOUS QUIZ, BUT **YOUR** ANSWERS MAY HAVE CHANGED. PLEASE SHARE THE UPDATES IF **YOU** GOT ANY.

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.

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):



FLOOR-TO-CEILING HEIGHT = 3.0M

WINDOW DIMENSIONS:
FOR ALL THREE WINDOWS

CILL HEIGHT = 0.8M

WINDOW WIDTH = 2M

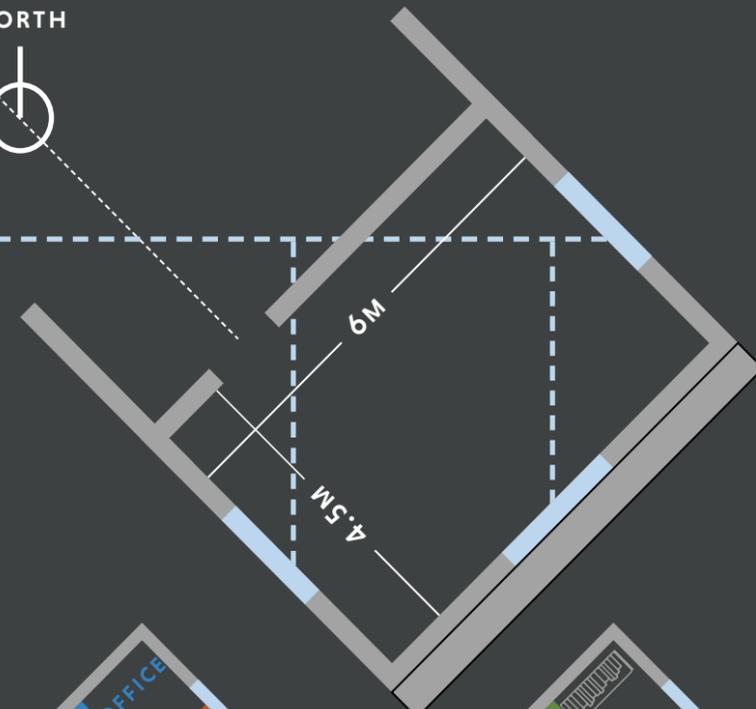
WINDOW HEIGHT = 1.5M

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



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?

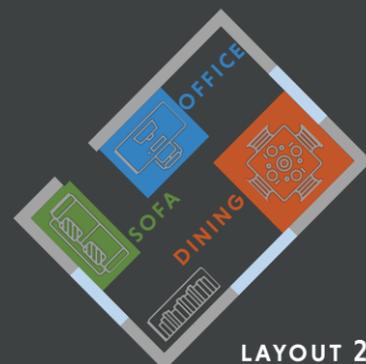
LAYOUT 1: LAYOUT 2: LAYOUT 3:

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

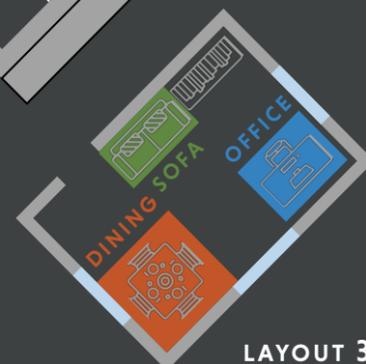
PLEASE BRIEFLY EXPLAIN YOUR CHOICE:



LAYOUT 1

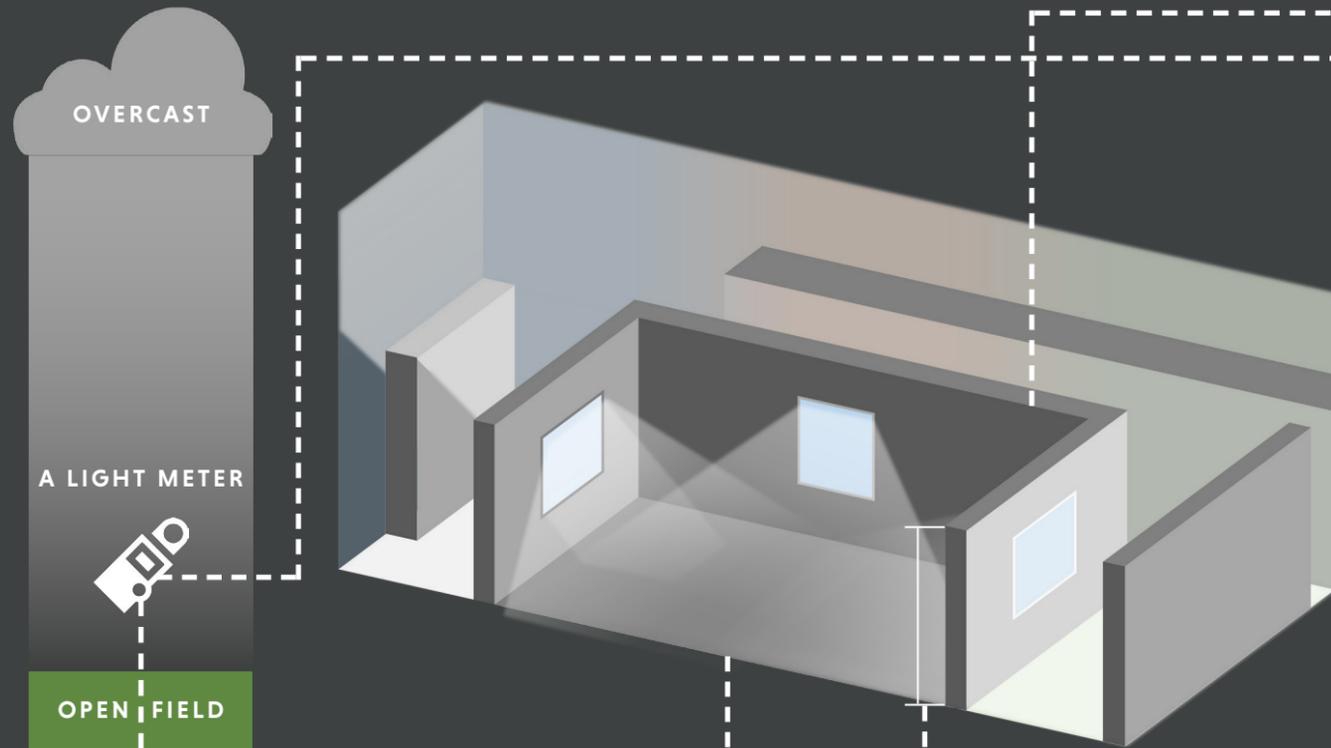


LAYOUT 2



LAYOUT 3

YOU ARE REVIEWING THE DAYLIGHT ACCESS OF A STUDY ROOM ON THE FIRST FLOOR OF THE SAME HOUSE IN BATH, UK.



ILLUMINANCE UNDER THE SKY ON A TYPICAL OVERCAST DAY = 4000LUX

AVERAGE ILLUMINANCE NEEDED IN THE STUDY ROOM TO MAKE IT BRIGHT ENOUGH = 200LUX

THE AVERAGE DAYLIGHT FACTOR NEEDED TO ACHIEVE 200LUX IN THE STUDY ROOM ON A TYPICAL OVERCAST DAY = 5%

FLOOR-TO-CEILING HEIGHT = 3.0M

WINDOW PARAMETERS:
FOR ALL THREE WINDOWS

CILL HEIGHT = 0.8M

WINDOW WIDTH = 1.2M

WINDOW HEIGHT = 1.2M

DOUBLE-GLAZED

LIGHT TRANSMITTANCE = 0.7

INTERIOR FINISHES:

PAINTED WALL REFLECTANCE = 0.6

BIRCH FLOOR REFLECTANCE = 0.5

PAINTED CEILING REFLECTANCE = 0.8

FOR ALL WINDOWS
OBSTRUCTION
ANGLE = 30°

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.

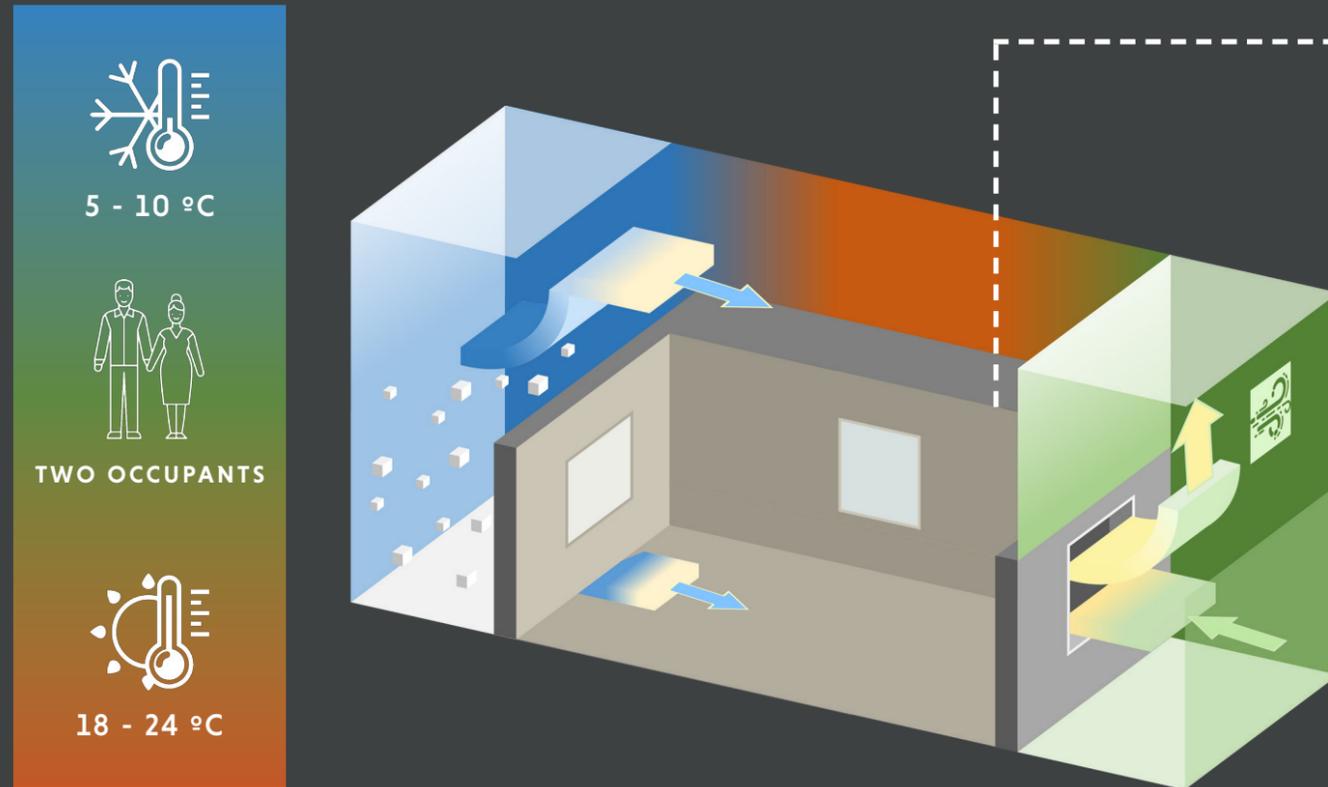
Q4: USE THE INFORMATION ON THE LEFT, WOULD YOU EXPECT THE STUDY ROOM TO BE BRIGHT ENOUGH?

BRIGHT ENOUGH: NOT BRIGHT ENOUGH:

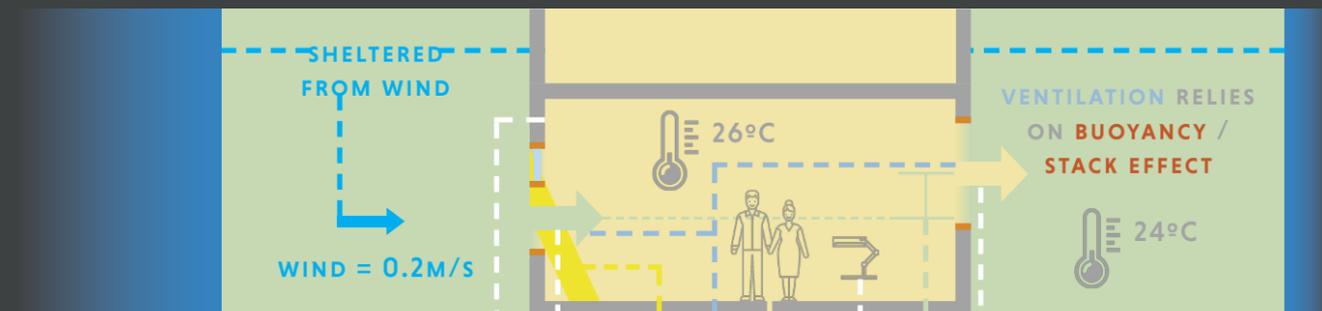
HOW CONFIDENT YOU ARE: LOW 1 - 2 - 3 - 4 - 5 - HIGH

PLEASE BRIEFLY EXPLAIN YOUR CHOICE:

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



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 EXPLAIN YOUR CHOICE:

VOLUME OF THE ROOM = 81m^3

OPENING PARAMETERS:

- LOWER WINDOW OPENABLE AREA = 1m^2
- HIGHER WINDOW OPENABLE AREA = 1.5m^2
- STACK HEIGHT BETWEEN THE OPENINGS = 0.75m
- DISCHARGE COEFFICIENT OF OPENINGS = 0.65

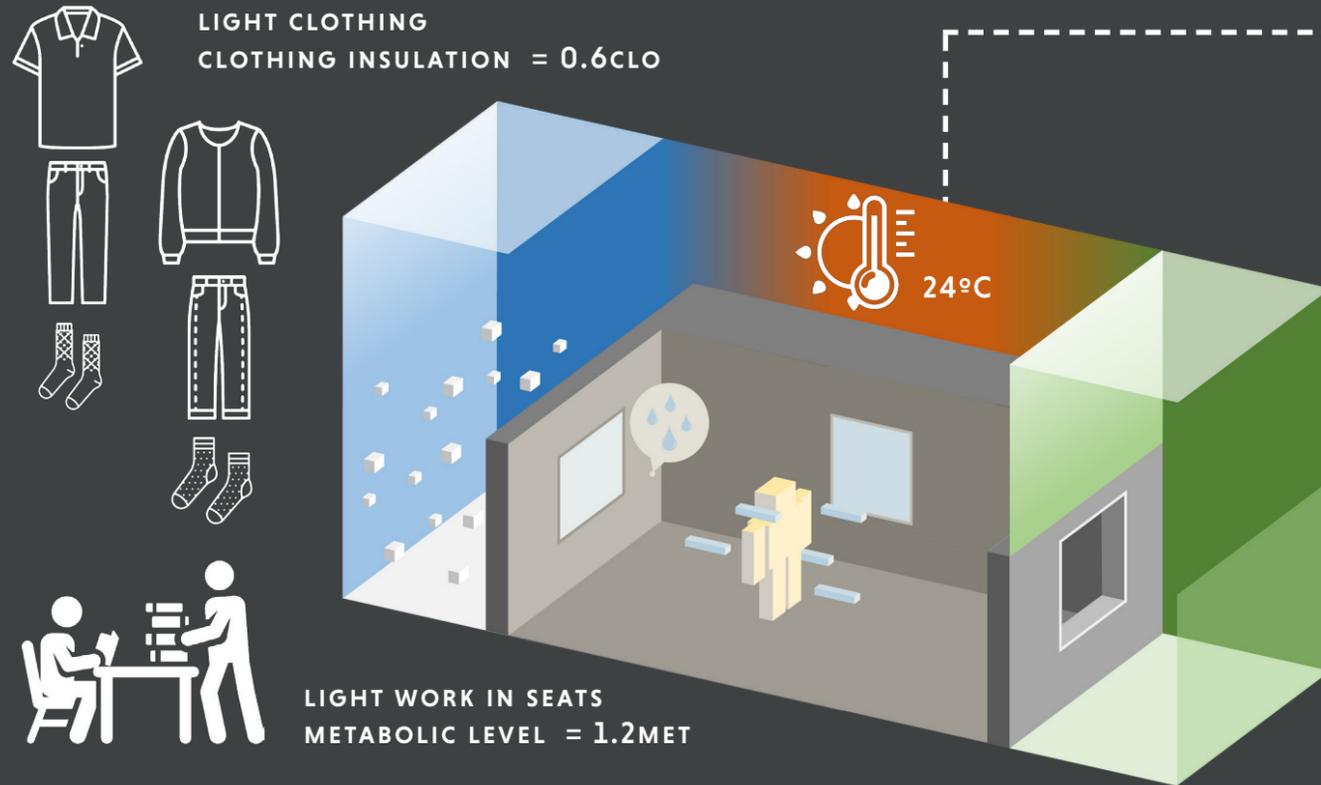
HEAT TO BE DISSIPATED:

- FROM THE OCCUPANTS = 150W ($75\text{W} \times 2$)
- FROM THE EQUIPMENT AND LIGHTING = 150W
- FROM THE SUN = 200W
- TOTAL AMOUNT OF HEAT = 500W

CAN THE OPENINGS ACHIEVE THE NEEDED VENTILATION FLOW?

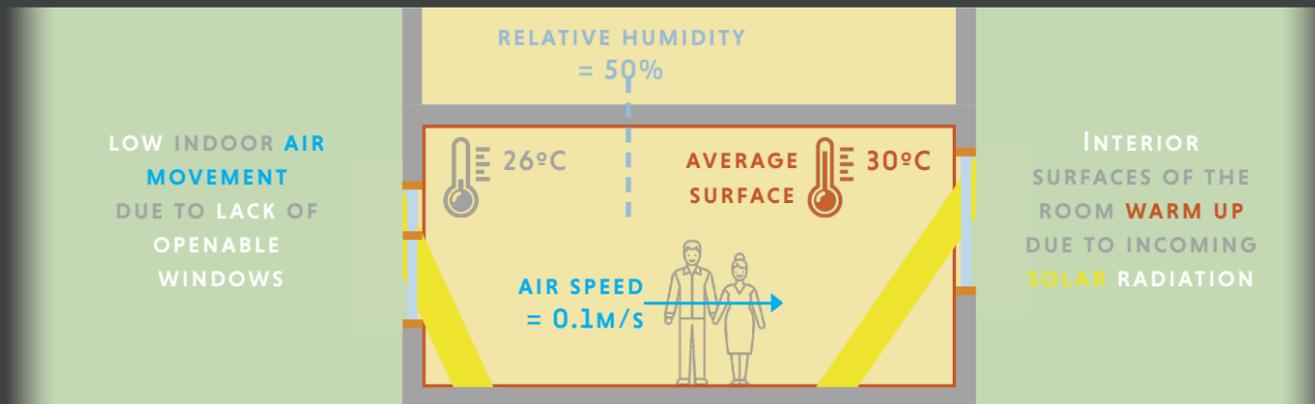
VENTILATION FLOW NEEDED TO DISSIPATE THE TOTAL AMOUNT OF HEAT = $9.4\text{ ACH} = 211.5\text{L/s}$

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%



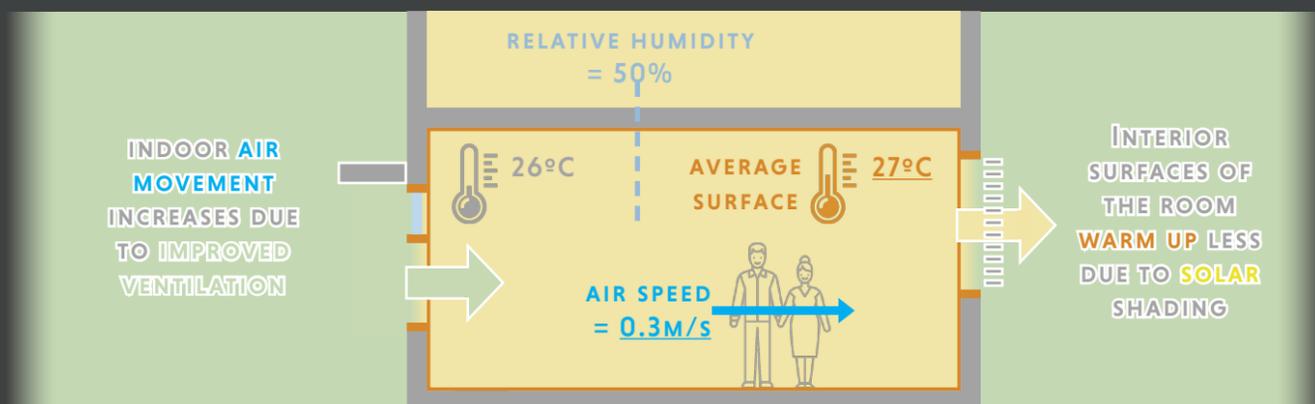
YOU ARE CHECKING IF THE SOLAR SHADING AND VENTILATION APPLIED FOR DEALING WITH OVERHEATING ARE EFFECTIVE.

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

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



PLEASE BRIEFLY EXPLAIN YOUR CHOICE:

WE WANT TO HEAR **YOUR SAY**

ANY QUESTIONS?

ANY THOUGHTS TO SHARE?

ANY OTHER FEEDBACKS?

ICONS USED IN THE QUIZ



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