HW9_after compartment fire due before the final

Due Dec 12 at 1:59pm **Points** 6 **Questions** 6
Available until Dec 12 at 1:59pm **Time Limit** None **Allowed Attempts** 3

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	3,007 minutes	6 out of 6

Correct answers are hidden.

Score for this attempt: **6** out of 6
Submitted Dec 11 at 4:51pm
This attempt took 3,007 minutes.

Question 1 1 / 1 pts

Calculate the heat release rate [MW] of a fire burning in a compartment where the equivalence ratio is larger than 1. Assume the following values. Write down your answer rounded to the first decimal place without units.

- Total fuel amount in a room = 10 kg
- Average heat of combustion of the fuel = 20 kJ/g
- Opening size: a single 2.4 m wide and 0.9 m tall opening
- The amount of air flow rate into the room = 400 g/s

1.2

Question 2

1 / 1 pts

Calculate the time [in sec] at which HRR becomes 100 kW for a t-squared fire with the fast growth rate. Write down your answer rounded to the nearest ones without any units.

- (●) 46
- ( ) 44
- ( ) 42
- ( ) 48

Question 3

1 / 1 pts

Calculate the upper layer temperature of a room (3.6 m by 2.4 m by 2.4m (H)) at 100 sec. The fire size is 700 kW and the room has a 2.1 m high and 0.9 m wide opening. The wall consists of 0.016 m thick gypsum boards and wood studs. The properties of the gypsum board are as below.

- Thermal conductivity = 0.48 W/m-K
- Density = 1440 kg/m3
- Specific heat = 0.84 kJ/kg-K

- (●) 258
- ( ) 254
- ( ) 351
- ( ) 346

Question 4

1 / 1 pts

What would be the heat release rate [kW] at flashover in a compartment (3.6 m(W) × 4 m (L) × 3 m (H)) that has a 2.4 m^2 opening area having the height of 0.9 m. Use the correlation from Thomas. Write your answer rounded to the nearest ones without units.

- (●) 1422
- ( ) 1441
- ( ) 1505
- ( ) 1480

Question 5

1 / 1 pts

Calculate the maximum possible heat release rate within a compartment (4.5 m wide, 6 m long, and 3.6 m high) and a 1.2 m wide and 1.2 m high wall opening assuming an oxygen-deficient condition.. Round your answers to the nearest ones without any units.

2,366

Question 6

1 / 1 pts

For a 100 kW fire with CH4 (heat of combustion = 50 kJ/g), what would be the soot generation rate in g/s if soot yield is 0.02? Round your answer to the second decimal place without any units.

0.04

Quiz Score: **6** out of 6