HW4_after heat transfer_radiation due before exam1

Due Sep 28 at 12:59pm **Points** 2 **Questions** 2 **Time Limit** None
Allowed Attempts 3

Take the Quiz Again (https://canvas.okstate.edu/courses/137119/quizzes/349076/take?user_id=220308)

Attempt History

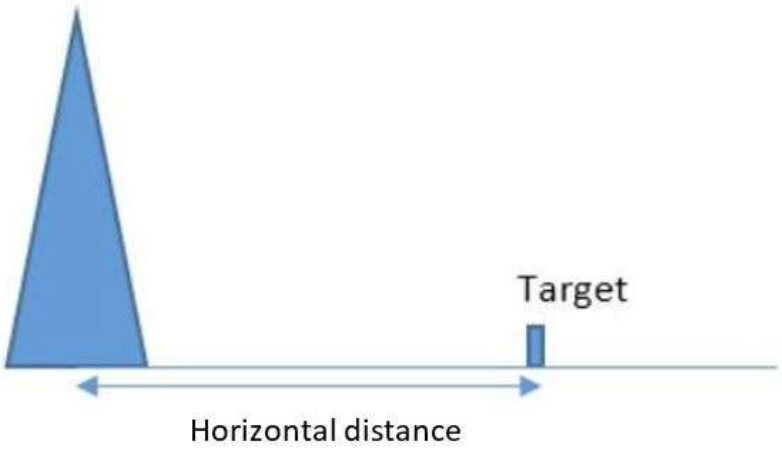
	Attempt	Time	Score
LATEST	Attempt 1 (https://canvas.okstate.edu/courses/137119/quizzes/349076/history?version=1)	1,753 minutes	2 out of 2

Correct answers are hidden.

Score for this attempt: **2** out of 2
Submitted Sep 27 at 5:31pm
This attempt took 1,753 minutes.

Question 1 1 / 1 pts

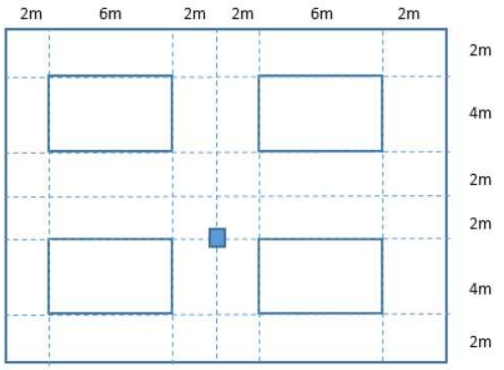
Heptane spills and forms a pool fire in a dike area of 9 m diameter. Calculate heat flux in kW/m2 on the exposed surface of the target horizontally 20 m away from the base of fire? Assume the followings: flame height = 30 m (point source height = 15 m), heat release rate = 120 MW, radiative fraction = 0.7. Write down your answer rounded to the nearest ones without any units.

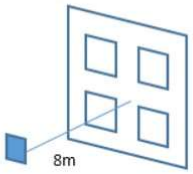


- (●) 9
- ( ) 13
- ( ) 17
- ( ) 20

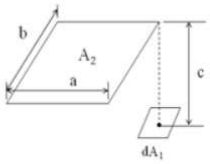
Question 2 **1 / 1 pts**

Calculate the radiative heat flux in kW/m2 on the target which is 8 m away from the surface of the window openings. Assume the emissivity of the window opening is 0.9 and the surface temperature 1200K. Write down your answer rounded to the nearest ones without any units.





Configuration factor equation (SFPE HB: p.A-48)



Plane element dA_1 to plane parallel rectangle; Normal to element passes through corner of rectangle.

$$X = \frac{a}{c} \qquad Y = \frac{b}{c}$$

$$F_{d1\text{-}2} = \frac{1}{2\pi}\left(\frac{X}{\sqrt{1+X^2}}\tan^{-1}\frac{Y}{\sqrt{1+X^2}} + \frac{Y}{\sqrt{1+Y^2}}\tan^{-1}\frac{X}{\sqrt{1+Y^2}}\right)$$

a	b	c	X	Y	View factor
8	8	8	1	1	0.139
8	6	8	1	0.75	0.119
8	4	8	1	0.5	0.09
8	6	8	1	0.75	0.119
8	2	8	1	0.25	0.049
6	2	8	0.75	0.25	0.043
2	4	8	0.25	0.5	0.033
2	2	8	0.25	0.25	0.018

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Quiz Score: **2** out of 2