

# Ch 1 HRW

HW Due Wed

Ch 1: 18, 30, 32

25, 36,

16, 29

18



Show min surface occurs when  $h=2r$

$$A_{cyl} = 2\pi r^2 + 2\pi r h$$



$$A = 2\pi r^2 + 2\pi r h$$

$$A = 2\pi r^2 + 2\pi r \frac{V}{\pi r^2}$$

$$V = \pi r^2 h$$
  
$$\frac{V}{\pi r^2} = h$$

$$A(r) = 2\pi r^2 + \frac{2V}{r}$$

$$\frac{dA(r)}{dr} = 4\pi r - 2Vr^{-2} = 0$$

$$2Vr^{-1}$$

$$4\pi r = \frac{2V}{r^2}$$

$$r^3 = \frac{V}{2\pi} \Rightarrow r = \sqrt[3]{\frac{V}{2\pi}}$$

Recall

$$V = \pi r^2 h$$

$$V = \pi \left(\frac{V}{2\pi}\right)^{2/3} h$$

$$V = 2\pi r^2 h$$

Q.E.D.

32

$$\frac{\text{kg}}{\text{atom}} \# \text{ atom of H} \left( \frac{1.6605402 \times 10^{-27} \text{ kg}}{1.0 \text{ u}} \right) = 1.0 \text{ kg}$$

$$\# \text{ atom} = 1.0 \text{ kg} \left( \frac{1.0 \text{ u}}{1.6605402 \times 10^{-27} \text{ kg}} \right) \left( \frac{1 \text{ atom}}{1 \text{ u}} \right)$$

$$\# \text{ atom} = 6.022 \times 10^{26} \text{ atoms}$$

#25

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■ 70. _mph          31.2928. _m
                    _s
■ 1.2. _mph ▶ _m
                    _s
                    .536448. _m
                    _s
_slug
Main          000 0110  0110  0110

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■ dayOfWk(2000, 8, 2)      2
■ dayOfWk(1986, 7, 22)    3
■ dayOfWk(1987, 1, 14)    4
■ dayOfWk(1987, 4, 29)    4
■ dayOfWk(1987, 3, 2)     2
■ dayOfWk(1987, 1, 7)     4

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32

	A	B	C	D	E	F	G	H
1	36	36	37	37	37	38		
2								
3	12:03:59	12:02:52	12:01:45	12:00:38	11:59:31	11:58:24	11:57:17	12:00:38
4	12:03:59	12:02:49	12:01:54	12:01:52	12:01:32	12:01:22	12:01:12	12:00:38

choose average

The rank for the average being closest to NOON

B, D & E, A, C

Rank of which clock was the most consistent, i.e. standard deviation was small.

	A	B	C	D	E	F	G	H
3	12:03:59	12:02:52	12:01:45	12:00:38	11:59:31	11:58:24	11:57:17	0:02:25
4	12:03:59	12:02:49	12:01:54	12:01:52	12:01:32	12:01:22	12:01:12	0:00:59

B, E, A, D, C

I think, I ought to check But these really don't agree well with the standard.

