Energy #1

p221 MC 1, 6, 8
p222 Prob 1, 2, 58

(6)

p221 – Multiple Choice

1) Positive work? (gain E)

(b) Lift a heavy suitcase

6) Zero physics work? (3)
choose all

✓ (a) Hold a child
✓ (b) push stuck car w/o it move
✓ (c) rope supports Chandelier
✗ (d) self propelled lawn mower
✗ (e) pull a sled uphill

8) Object 1 does +10 J of work on object 2?

(a) exert 10 N F for 1 m
(b) exert 1 N F for 10 m
(c) exert 10 N F @ 60° for 2m
✓ (d) All of above

p222- Problems

1) wagon filled w/ sand

$m = 20\,kg$
$d = 30\,m$
$\theta = 25°$
$F = 20\,N$
$W = ?$

(1)

$W = Fd\cos\theta$
$= (20\,N)(30\,m)\cos 25°$
$= 540\,J$

2) & suitcase

$m = 15\,kg$

a) Lift it .80m

$W = Fd = mgd$
$= (15\,kg)(9.81\,m/s^2)(.80\,m)$
$= 120\,J$

(1)

b) hold at rest $W = 0\,J$

c) Lower it .80m

$W = -120\,J$

d) assumption? constant speed

p225 58) Fire engine lift water

$m = 30\,kg$
$d = 20\,m$
$t = 1\,s$
$P = ?$

(i)

$$P = \frac{W}{t} = \frac{mgd}{t}$$

$$= \frac{(30\,kg)(9.81\,m/s^2)(20\,m)}{1\,s}$$

$$= 5900\,W$$