

Year 8 SCIENCE - TL REVISION (ANSWERS)

1. The ability to do work.

2.	E_p POTENTIAL	POTENTIAL
	KINETIC	ELECTRICAL
	KINETIC	POTENTIAL
	KINETIC	KINETIC

3. E_k - mass and velocity

E_p - mass and height (above ground)

4. In a "transfer" the energy does not change type, in a transformation the energy changes from one type to another.

5. "waste" energy is energy not used to produce work.

6. kg, m/s, s, m, m/s/s, J, J

7. a) chemical \rightarrow E_k \rightarrow E_k \rightarrow sound.

b) chemical \rightarrow heat \rightarrow E_k
 \rightarrow sound

8. a) Energy cannot be created or destroyed, only transferred or transformed.

b) T
T

T (in nuclear reactions some mass is converted into energy)

F (should read "minus the energy lost as")

9. A - assuming the gravity is constant, and the mass of rocket is constant (in truth neither of these is true so it is impossible to answer)

10.

electrical	light
electrical	sound
chemical	E_K
chemical	E_K
light	chemical

11. Television B, more of the electrical energy is transformed into useful energy (work). More light and sound is produced = better T.V

12.

a) E_K KINETIC	f) POTENTIAL
b) E_K KINETIC	g) KINETIC
c) POTENTIAL	h) KINETIC
d) KINETIC	i) POTENTIAL
e) KINETIC	j) POTENTIAL

13.

A - 1	C - 5
B - 4	D - 2

14.

$$E_K = \frac{1}{2} \times m \times v^2 \text{ } \frac{1}{2}$$

$$= \frac{1}{2} \times 2.56 \times 16^2 \text{ } \frac{1}{2}$$

$$= 328 \text{ J } \frac{1}{2}$$

15.

$$E_{GP} = m \times g \times ht$$

$$= 145 \times 9.8 \times 30000$$

$$= 42,630,000 \text{ J}$$

16.

$$E_{GP} = m \times g \times ht$$

$$\frac{E_{GP}}{m \times g} = ht$$

$$\frac{10000}{700 \times 9.8} = ht$$

$$1.13 \text{ m} = ht$$

17.

$$v = \frac{d}{t}$$

$$= \frac{20 \text{ m}}{8 \text{ s}}$$

$$= 2.5 \text{ m/s}$$

18. a) E_k $E_k = \frac{1}{2} \times m \times v^2$
 $= \frac{1}{2} \times 2.1 \times 30^2$
 $= 945 \text{ J}$

b) E_{gp} $E_{gp} = m \times g \times h$
 $= 12 \times 9.8 \times 21$
 $= 2470 \text{ J}$

c) E_k $E_k = \frac{1}{2} \times m \times v^2$
 $= \frac{1}{2} \times 1120 \times 40^2$
 $= 896,000 \text{ J}$

d) E_{gp} $E_{gp} = m \times g \times h$
 $= 20 \times 9.8 \times 79$
 $= 15484 \text{ J}$

e) E_{gp} $E_{gp} = m \times g \times h$
 $= 90 \times 9.8 \times 45$
 $= 39,690 \text{ J}$

f) E_{gp} $E_{gp} = m \times g \times h$
 $= 966 \times 9.8 \times 72$
 $= 681,610 \text{ J}$

19. $E_k = \frac{1}{2} \times m \times v^2$
 $= \frac{1}{2} \times 3 \times 2^2$
 $= 6 \text{ J}$

20. a) 2nd object, both mass and velocity are larger values therefore must have highest

E_k as $E_k = \frac{1}{2} \times m \times v^2$

b) 2nd object 1 = $E_{gp} = m \times g \times h$ 2 $E_{gp} = m \times g \times h$
 $= 2 \times 9.8 \times 10$ $= 4 \times 9.8 \times 10$
 $= 196 \text{ J}$ $= 392 \text{ J}$