



WORKSHEET

Full marks 28

1 Key words [4]

bending liquid opaque ray screen shadow solid sound straight vacuum

2 Label the diagram **[2]**

The diagram illustrates the principle of a pinhole camera. On the left, a candle (labeled 1) has a flame at the top and a base at the bottom. Two light rays are shown: one from the flame (labeled 'from the flame') and one from the base (labeled 'from the foot'). These rays pass through a small hole (labeled 2) in a barrier. The barrier consists of a 'big tube' and a 'small tube'. The light rays converge on the opposite wall of the 'small tube', forming an inverted image. The top of the image is labeled 3 and the bottom is labeled 4. An eye is shown on the right, looking at the image.

1. _____ 2. _____
3. _____ 4. _____

3 Multiple choice **[5]**

i. Which of these is **not** needed to form a shadow? [1]

- a. light** **b. a screen**
c. a transparent object **d. an opaque object**
- ii. What kind of image is seen in a pinhole camera?** **[1]**
- a. upright (erect)** **b. inverted (upside down)**
c. standing up and sideways **d. lying flat**



d. Give a reason: the speed of sound is highest in solids.

[2]

6 Long answer

[4]

Write a long answer to the following question.

What is a shadow? What three things are needed to form one? Why is a shadow long in the morning and short at midday?

7 Think

[2]

Think, then answer.

We see the lightning in the sky first and hear the thunder later. Why?

8 Activity: Make a shadow

(not marked)

Shine a torch on a wall. Hold each thing between the torch and the wall, and write what kind of shadow it makes.

Thing	Transparent, translucent or opaque?	Shadow: none, faint or dark?
clear glass		
butter paper		
wooden board		
your hand		

Move your hand closer to the torch. What happens to the size of its shadow?

