

Hillcrest High School

Grade 9

TECHNOLOGY

JUNE 2023

MARKS: 100

EXAMINER: Mrs A. Stols

TIME: 1 Hour

MODERATOR: Mrs T. Tonkin

NAME: _____ **GRADE 9** _____

SUBJECT EDUCATOR:
D'ALMAINE/ STOLS/ TONKIN

Q1	Q2	Q3	Q4	TOTAL
20	20	30	30	100

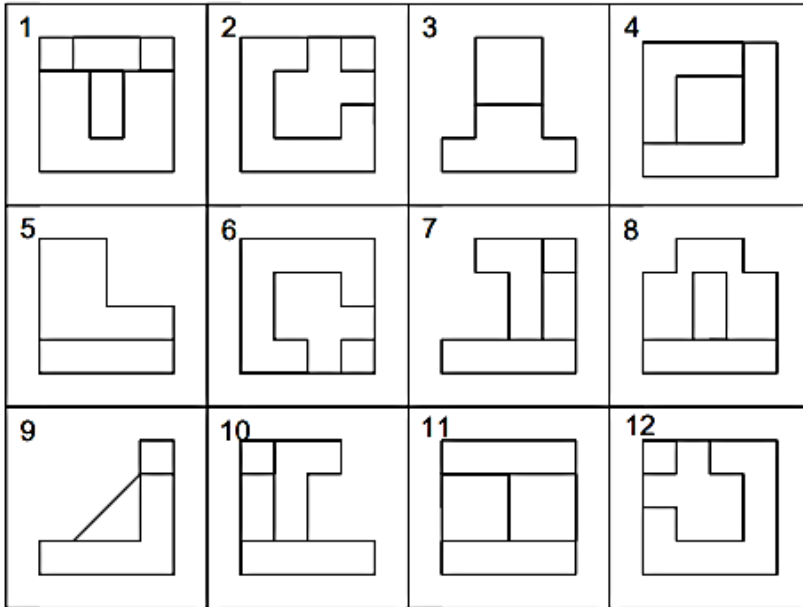
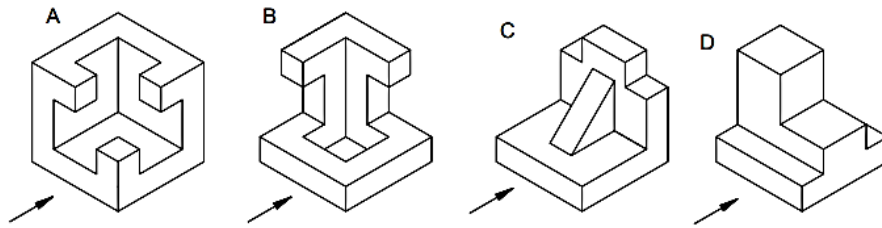
INSTRUCTIONS

1. The question paper consists of 4 questions and 7 pages including the cover page.
2. Answer all questions in the spaces provided.
3. Write your name and grade clearly and neatly in the space provided.
4. Highlight your Technology teacher's name above.
5. Technological based answers must be written.
6. All drawings/sketches must be completed using a sharp pencil and drawing instruments unless otherwise instructed.
7. Marks will be deducted for untidy work especially drawings/sketches.

QUESTION 1

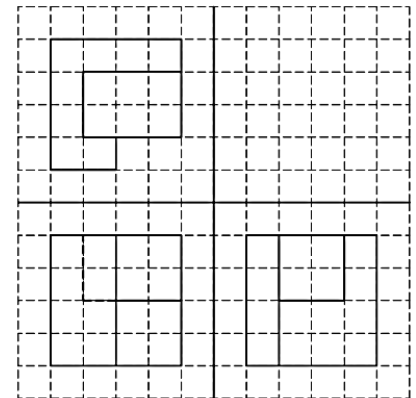
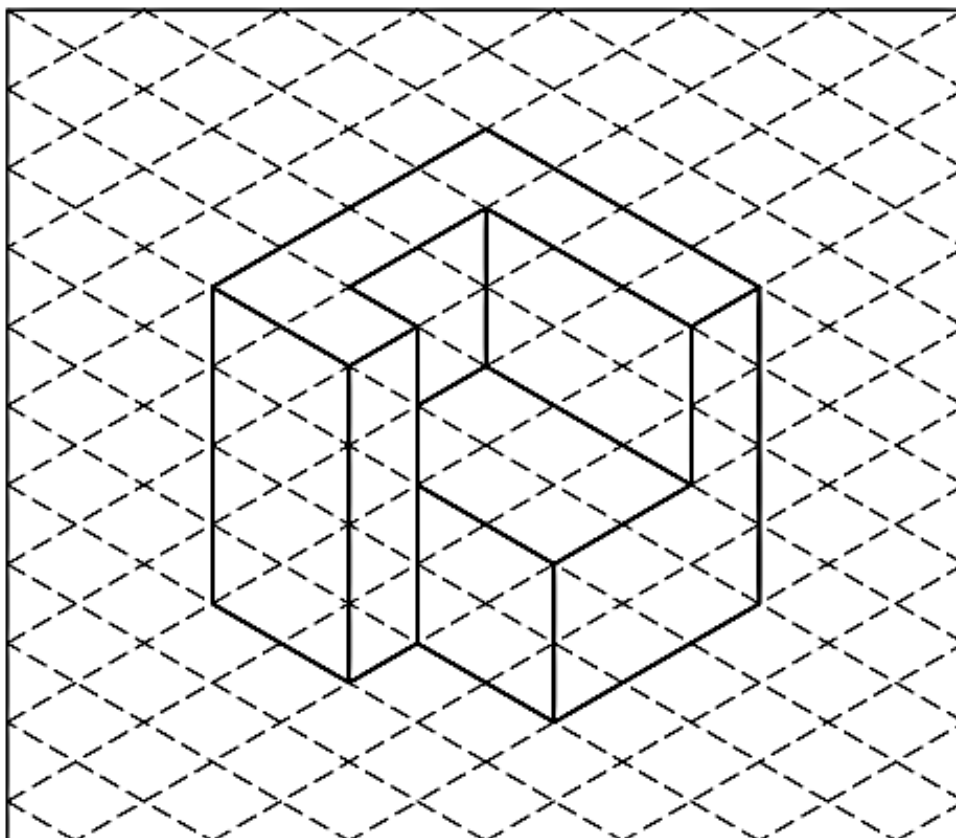
[20]

1.1. Complete the table below by selecting the correct number that matches the FRONT, TOP and RIGHT views of the isometric views given. The arrow indicates the front view. (12)


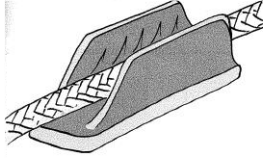
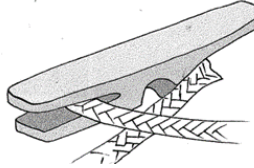


Drawing	Front	Top	Right
A	2	6	12
B	10	4	7
C	8	1	9
D	5	11	3

1.2. The given figure shows the front, top and right view of a model in third angle orthographic projection. Draw an isometric view of the model. Colour in each view in a different colour. Darken the edges with pen or make the edges thicker. (8)



3.2. Complete the spaces below: (6)

Type of cleat	Picture	Example of where it is used
Cam		Blinds
Clam		
Jam		Anchor sailing boats to the dock

3.3. Explain how a cleat works (2)

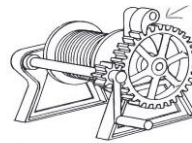
A cleat secures a rope by pinching it between or locking it around two pieces of metal or plastic.

3.4. Which is the simplest cleat? Explain how it works. (2)

A jam cleat is the simplest type of cleat. You simply wrap the rope around the two arms, or horns to fasten the rope.

QUESTION 4

4.1. Look at the mechanism alongside and answer the following questions: (3)



4.1.1. Identify the mechanism

Winch

4.1.2. What is the purpose of this mechanism?

To secure a rope or cable in place, not allowing it to slip backward. Also keeping the rope neat.

4.1.3. Where could a mechanism like this be used?

Water well

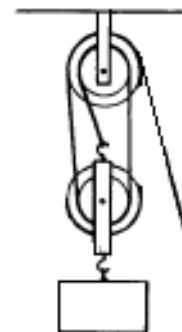
4.2.



Elevator issues at the library

The Worcester Public Library has purchased many new books to be displayed on the second floor. There are 600kgs of books to move. The elevator only has the capacity to lift with 50kg.

See a sketch of the pulley system used in the elevator alongside.



4.2.1. What is the number of falls? (1)

3

4.2.2. What load can the elevator lift at one time? (Show your calculations) (2)

$$\text{Load} = \text{Mechanical Advantage} \times \text{Effort}$$

$$= 3 \times 50\text{kg}$$

$$= \underline{150\text{kg}}$$

4.2.3. What is the Mechanical advantage of the elevator? (Show your calculations) (2)

$$\text{Mechanical Advantage} = \frac{\text{Load}}{\text{Effort}}$$

$$= \frac{150\text{kg}}{50\text{kg}}$$

$$= \underline{3}$$

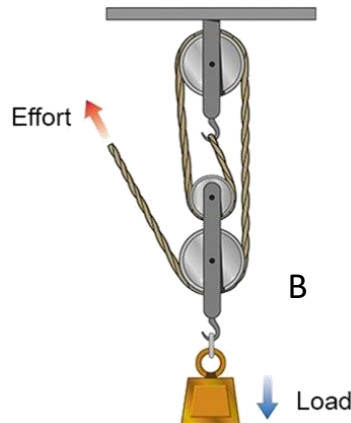
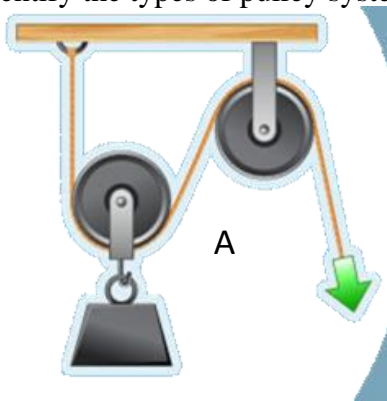
4.2.4. How many trips does the elevator have to do to get all the books to the second Floor? (Show your calculations) (2)

$$\text{Trips} = \frac{\text{Total weight of books}}{\text{Weight per trip in elevator}}$$

$$= \frac{600\text{kg}}{150\text{kg}}$$

$$= \underline{4}$$

4.3. Identify the types of pulley systems: (2)



A – Compound Pulley

B – Block and tackle

4.4. Look at the different examples below and indicate if the example is using a hydraulic or a pneumatic system? (3)

Example	Your answer
Tipper truck	Hydraulics
Jack hammer	Pneumatics
Paint sprayer	Pneumatics
Forklift truck	Hydraulics
Nail gun	Pneumatics
TLB	Hydraulics

4.5. Define Pascal's Principle: (2)

Pascal's principle states that when a force is applied to a liquid in a closed system, the pressure is applied evenly throughout the liquid in all directions without any loss.

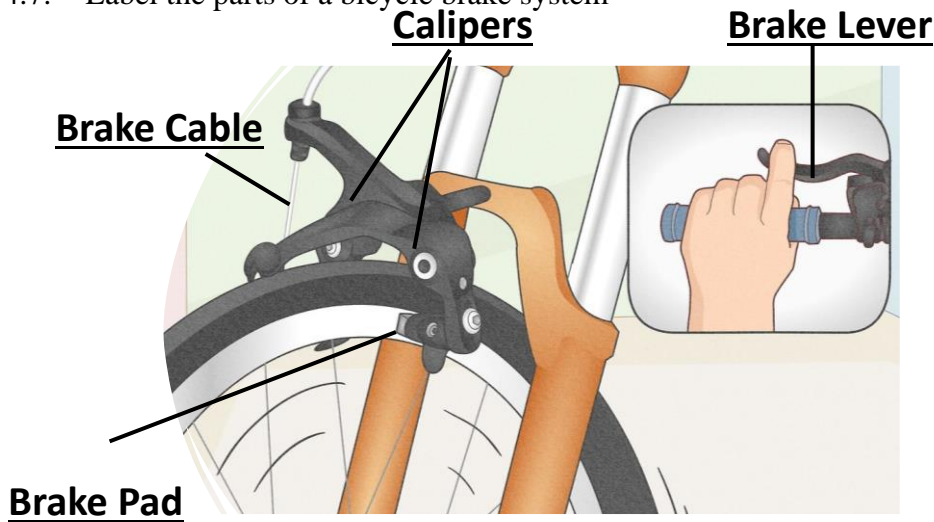
- 4.6. A hydraulic lift system has an input piston of 5m^2 and an output piston which has an area of 20m^2 . The load being lifted is 1000N
4.6.1. Calculate the pressure of the system? (2)

$$\begin{aligned}\text{Pressure} &= \frac{\text{Force}}{\text{Area}} \\ &= \frac{1000\text{N}}{20\text{m}^2} \\ &= \underline{50\text{N/m}^2}\end{aligned}$$

- 4.6.2. What Input force is needed to lift the load? (2)

$$\begin{aligned}\text{Input Force} &= \text{Pressure} \times \text{Area} \\ &= 50\text{N/m}^2 \times 5\text{m}^2 \\ &= \underline{250\text{N}}\end{aligned}$$

- 4.7. Label the parts of a bicycle brake system (4)



- 4.8. Answer the following multiple-choice questions. Write all your answers in the space provided at the bottom. (5)

4.8.1. What does the following short-cut key do: Win + I?

- A. Open the Windows Internet Explorer charm
- B. Switch Input language and keyboard layout
- C. Display properties for the selected item
- D. Open the Windows Settings charm

4.8.2. What does the following short-cut key do in a Dialog box: CTRL + SHIFT + TAB?

- A. Move forward through the tabs
- B. Move backward through the tabs
- C. Move through options
- D. Move back through options

4.8.3. What does the following general short-cut key do: F6?

- A. Cycle through screen elements in a windows or on the desktop
- B. Search for file or folder
- C. Rename the selected item
- D. Refresh the active window

4.8.4. What does the following \$ symbol refer to in: a formula in Excel spreadsheets?

- A. Absolute cell reference, where the reference is not changed using auto-fill
- B. The percentage of a value used in a calculation
- C. The reference of a worksheet in a workbook (Excel document)
- D. The American Dollar (as a currency)

4.8.5. Which short-cut key is used to: Temporary peek at the desktop?

- A. Win + E
- B. Win + B
- C. Win + F
- D. Win + ,

	Answers
4.8.1.	D
4.8.2.	B
4.8.3.	A
4.8.4.	A
4.8.5.	D