PULLEY SYSTEMS - REVERSING ROTATION

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On behalf of The World Association of Technology Teachers

# W.A.T.T.

World Association of Technology Teachers

This exercise can be printed and used by teachers and students. It is recommended that you view the website (www.technologystudent.com) before attempting the design sheet .

PULLEY SYSTEMS - REVERSING ROTATION

1. Sometimes it is necessary to reverse the rotation of the driven pulley wheel in relation to the driver pulley. If the driver is rotating in an anti-clockwise direction the driven pulley may be required to rotate in a clockwise direction. On the incomplete diagram shown below, add the belt that connects the driver and driven pulley wheels. Remember, it must reverse rotation at the driven pulley wheel.

MOTOR

DRIVER PULLEY   DRIVEN PULLEY
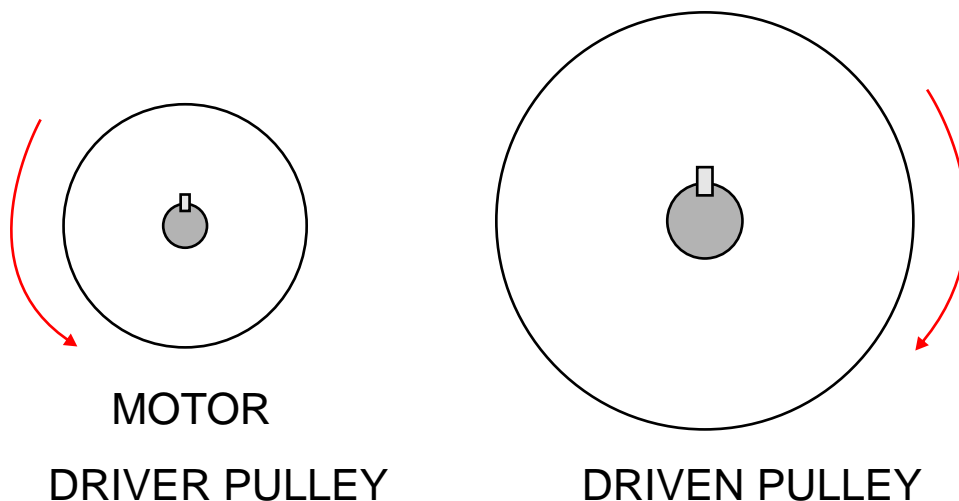
2. A system of four pulley wheels are set up as shown in the diagram below. The driver pulley rotates in an anti-clockwise direction. Drawn the direction of rotation on each of the pulley wheels, with arrows.

A

B

C   D

E   F

MOTOR
DRIVER PULLEY   COMPOUND PULLEY   COMPOUND PULLEY   OUTPUT PULLEY
                        WHEEL   WHEEL   WHEEL
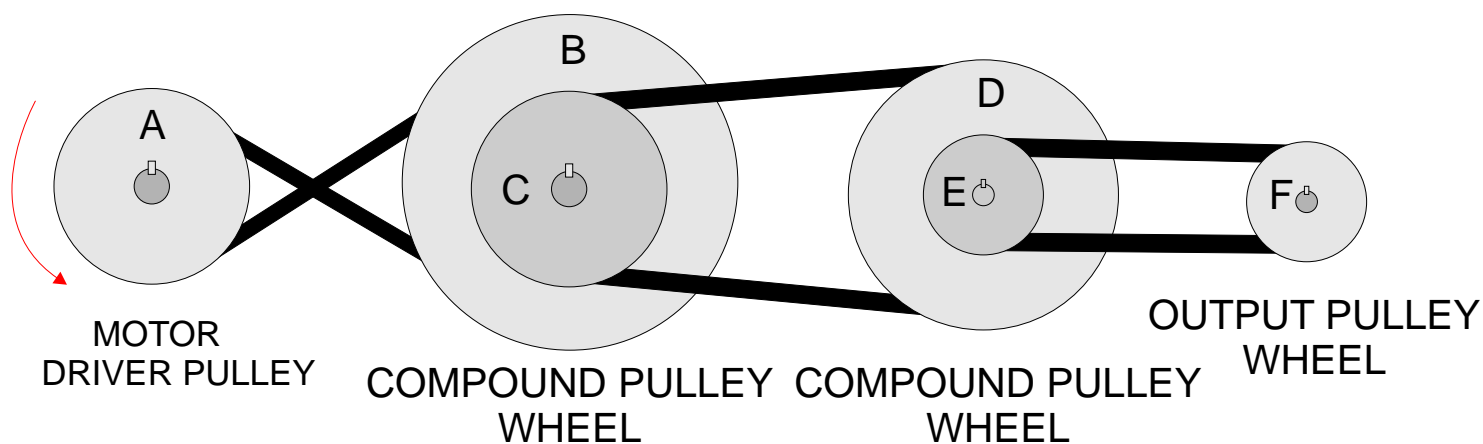
3. In what direction does the output pulley wheel 'F' revolve ?

_____

4. Why do pulley wheels B and C rotate in the same direction?

_____

_____

5. If one of the belts begins to 'slip', what would you consider the mostly likely reasons. Some keywords / phrases are listed below. They may help you answer this question.

DAMAGE   FRICTION   OIL/GREASE   TENSION   WEAR AND TEAR

_____

_____

_____

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6. Work out the ratios between the pulley wheels A:B C:D and E:F. Write the answers on the diagram below.

(B) 200 mm dia
(C)100 mm dia

(D) 120 mm dia
(E)40 mm dia

(A) 60 rpm
100 mm dia

B

(F) 30 mm dia

A

D

C

E

F

MOTOR
DRIVER PULLEY

COMPOUND PULLEY
WHEEL

COMPOUND PULLEY
WHEEL

OUTPUT PULLEY
WHEEL

RATIOS =   A : B   C : D   E : F
ANSWERS =   :   :   :

WORKING OUT
_____
_____
_____
_____
_____
_____
_____
_____

7. If pulley 'A' (driver) rotates at 60 rpm what is the output rpm at 'F'.

WORKING OUT
_____
_____
_____
_____
_____
_____
_____
_____