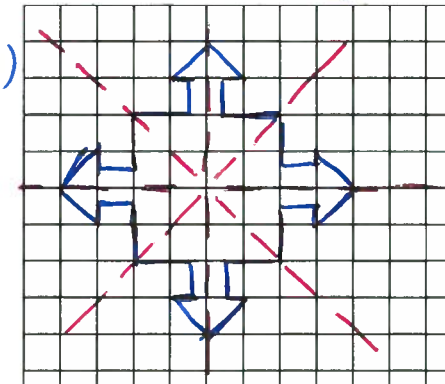
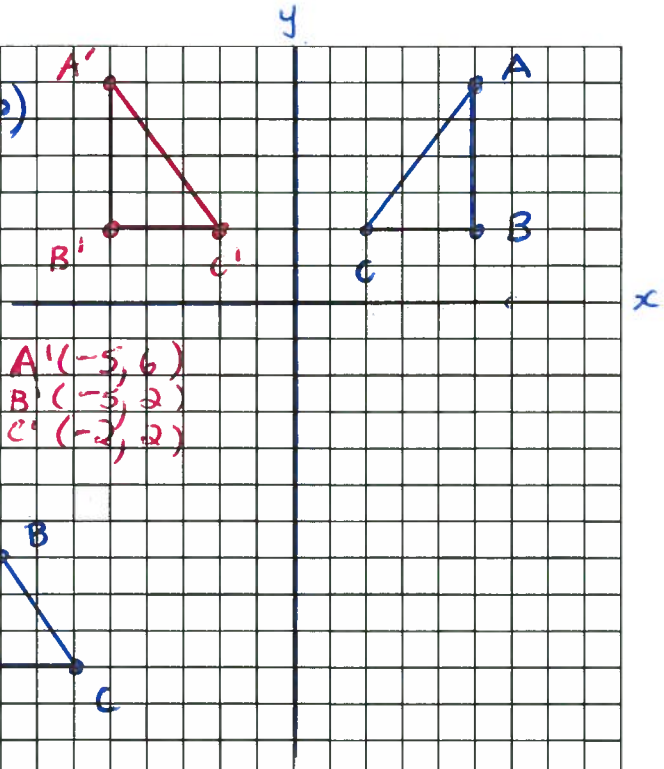
Symmetry and Surface Area – key

• Line Symmetry

a)

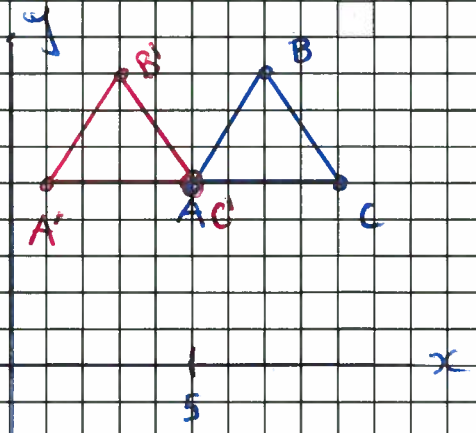


b)



A' (−5, 6)
B' (−5, 2)
C' (−2, 2)

c)



The is symmetry at $x = 5$ if Point symmetry is ignored.

• Rotation Symmetry and Transformations

a) order of rotation = 4

angle of rotation $= \frac{360°}{4} = \frac{1}{4}$

$= 90° = \frac{1}{4}$ turn.

b) number of lines of symmetry = 5

order of rotational symmetry = 5

• Surface Area

a) Prism

$SA = 2A_F + 2A_T + 2A_S$

$= 2lw + 2lw + 2lw$

$= 2(48)(32) + 2(48)(6) + 2(32)(6)$

$= 4032\ cm^2$

$SA_{cir} = 2\pi r^2$

$= 2(3.14)(8)^2$

$= 401.92\ cm^2$

Inside Hole

$A = \pi Dl$

$= (3.14)(16)(6)$

$= 301.44\ cm^2$

$SA_{TOT} = 4032\ cm^2 - 401.92\ cm^2 + 301.44\ cm^2$

$= 3931.52\ cm^2$

b) Prism

✱ Incorrect See next Page.

$SA = 2A_T + 2A_S + A_B$

$a^2 + b^2 = c^2$

$10^2 + 10^2 = c^2$

$c = 14.14213562\ cm$

$= 2\left(\frac{1}{2}bh\right) + 2lw + 2lw$

$= (14.14213562)(10) + 2(20)(10) + 2(20)(14.14213562)$

$= 141.4213562 + 400 + 565.6854248$

$= 1107.106781\ cm^2$

$SA_{circle} = 2\pi r^2$

$= 2(3.14)(2.5)^2$

$= 39.25\ cm^2$

Inside Hole

$SA = \pi Dl$

$= (3.14)(5)(20)$

$= 314\ cm^2$

$SA_{TOT} = 1107.106781 - 39.25 + 314$

$= 1381.856781\ cm^2$

$SA = 2A_T + 2A_S + A_B$

$= 2\left(\frac{bh}{2}\right) + 2lw + lw$

$= (6)(10) + 2(20)(10) + (20)(14.142135\overline{62})$

$= 100 + 400 + 282.8427124$

$= 782.847124\ cm^2$

$SA_c = 2\pi r^2$

$= 2(3.14)(2.5)^2$

$= 39.25 cm^2$

Inside Hole

$SA = \pi Dl$

$= (3.14)(5)(20)$

$= 314\ cm^2$

$SA_{TOT} = 782.847124 - 39.25 + 314$

$= 1057.592712\ cm^2$