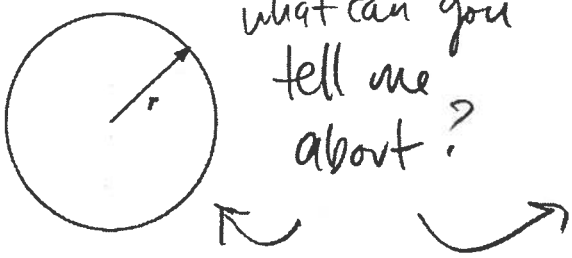
'ite w/ popcorn

A Fair Price

In the following questions, 'fair price' means that the amount you get is in proportion to the amount you pay. For example, the 'fair price' for twelve cookies is double the cost of six.

You may find the following formulas useful:



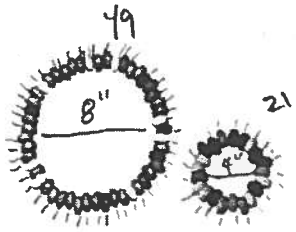
Area of a circle: πr^2

Circumference of a circle: $2\pi r = \pi d$

Volume of a cone: $\frac{1}{3}\pi r^2 h$

1. Candy Rings

A large ring of candy has a diameter of 8 inches and a small ring has a diameter of 4 inches.



(Diagram not to scale.)

Jasmina says:

"I get the same amount of candy from two small rings as from one large ring."

1. Is Jasmina correct? If you think Jasmina is correct explain why. If you think she is incorrect, replace the statement with one that is correct. Explain why your statement is correct. $2(4\pi) = 8\pi$

I think she is right. There is a linear relationship between pi & the diameter. The circumference & diameter would form a straight line plotted on a graph.

If the price of the small ring of candy is 40 cents, what is a *fair price* for a large one? Explain your answer.

80 cents. A large candy ring has the same amount of candy as 2 small rings

small: $\pi 3^2$, 9π

large: $\pi 6^2$, 36π

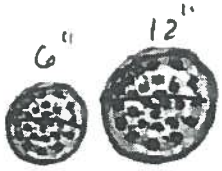
$4(9\pi) = 36\pi$

$36\pi = 36\pi$

πr^2

2. Pizzas

A large pizza has a diameter of 12 inches. A small pizza has a diameter of 6 inches.



(Diagram not to scale.)

"I get the same amount of pizza from three small pizzas as from one large pizza."

$3(\pi 3^2) = \pi 6^2$

$27\pi \neq 36\pi$

Is Jasmina correct about the pizzas?

If you think Jasmina is correct explain why.

If you think she is incorrect, replace the statement with one that is correct. Explain why your statement is correct.

No. "I get the same amount from four small pizzas as I do from one large pizza."

If the price for a small pizza is $3, what is a 'fair price' for a large one?

Explain your answer.

3. Popcorn

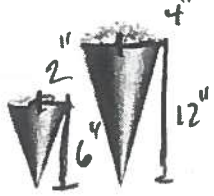
$\frac{1}{3}\pi r^2 h$

$\frac{1}{3}\pi 2^2(6)$ $\quad$ $\frac{1}{3}\pi 4^2(12)$

8π $\quad$ 64π

The larger cone has a top radius of 4 inches and a height of 12 inches.

The small cone has a top radius of 2 inches and a height of 6 inches.



(Diagram not to scale.)

"I get the same amount of popcorn from two small cones as from one large cone."

Is Jasmina correct about the popcorn cones?

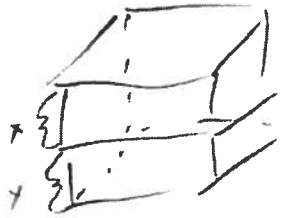
If you think Jasmina is correct, explain why.

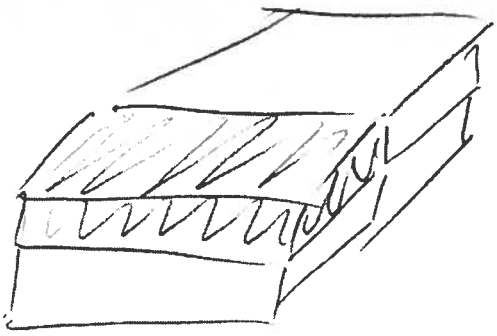
If you think she is incorrect, replace the statement with one that is correct. Explain why your statement is correct.

"I get the same amount of popcorn from eight small cones as from one large cone.

If the price for a small cone of popcorn is $1.20, what is a 'fair price' for a large one?

$9.60





True or False?

1. If you double just the width of a rectangular prism then **you double its volume** T	2. If you double just the width and height of a rectangular prism then **you double its volume** quadruple F
3. If you double the width, height, and length of a rectangular prism then **you double its volume** increase its volume by 8 times F	4. If you double the radius of a circle then **you double its circumference** T
5. If you double the radius of a circle then **you double its area** quadruple πx^2 F $\pi(2x)^2 = \pi 4x^2$	6. $\frac{4}{3}\pi x^3$ $4\pi r^2$ If you double the radius of a sphere F then quadruple **you double its surface area** 8 times $\frac{4}{3}\pi x^2$ $\frac{4}{3}\pi(2x)^3$ $\frac{4}{3}\pi 8x^3$

True or False? (continued)

7. $4/3\pi r^3$

If you double the radius of a sphere then

you double its volume

F 8 times

8. $2\pi rh$

If you double just the radius of a cylinder then

you double its curved surface area

T

$2\pi rh$ $2\pi(2r)h$ $\times 2 \rightarrow 4\pi rh$

9.

If you double just the height of a cylinder then

you double its volume

$\pi r^2 h$ T

$\pi r^2(2h)$

$2\pi r^2 h$

10.

If you double both the radius and height of a cylinder then

you double its volume

$\pi r^2 h$ 8 times octuple $\pi(2r)^2(2h)$ $\pi 4r^2(2h)$ $8\pi r^2 h$

F

11. $1/3\pi r^2 h$

If you double just the base radius of a cone then

you double its volume

quadruple

$1/3\pi r^2 h$ $1/3\pi(2r)^2 h$ $1/3\pi 4rh$ $4(1/3\pi rh)$

F

12.

If you double both the height and base radius of a cone then

you double its volume

8 times

$1/3\pi r^2 h$ $1/3\pi(2r)^2(2h)$ $1/3\pi 4r^2(2h)$ $8(1/3\pi r^2 h)$

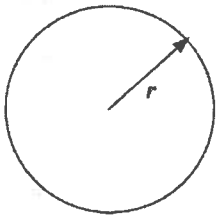
Daphne

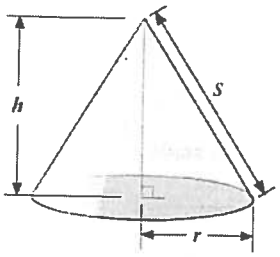
(1)

A Fair Price

In the following questions, 'fair price' means that the amount you get is in proportion to the amount you pay. For example, the 'fair price' for twelve cookies is double the cost of six.

You may find the following formulas useful:





Area of a circle: πr^2

Circumference of a circle: $2\pi r$

Volume of a cone: $\frac{1}{3}\pi r^2 h$

1. Candy Rings

A large ring of candy has a diameter of 8 inches and a small ring has a diameter of 4 inches.

(Diagram not to scale.)

Jasmina says:

"I get the same amount of candy from two small rings as from one large ring."

1. Is Jasmina correct? If you think Jasmina is correct explain why. If you think she is incorrect, replace the statement with one that is correct. Explain why your statement is correct.

Yes, she's correct. Double the circumference of the smaller equals the circ. of the larger one.

If the price of the small ring of candy is 40 cents, what is a *fair price* for a large one? Explain your answer.

$.80 $C = \pi d$

2. Pizzas

A large pizza has a diameter of 12 inches. A small pizza has a diameter of 6 inches.

(Diagram not to scale.)

"I get the same amount of pizza from ~~three~~ 2 small pizzas as from one large pizza."

Is Jasmina correct about the pizzas?

If you think Jasmina is correct explain why.

If you think she is incorrect, replace the statement with one that is correct. Explain why your statement is correct.

No. The large pie is only 1/3 as much pizza as 3 small pies

If the price for a small pizza is $3, what is a 'fair price' for a large one?

Explain your answer.

#6. 1 lg. = 2 sm.

3. Popcorn

The larger cone has a top radius of 4 inches and a height of 12 inches.

The small cone has a top radius of 2 inches and a height of 6 inches.

(Diagram not to scale.)

"I get the same amount of popcorn from ~~two~~ 8 small cones as from one large cone."

Is Jasmina correct about the popcorn cones?

If you think Jasmina is correct, explain why.

If you think she is incorrect, replace the statement with one that is correct. Explain why your statement is correct.

No. 2 small cones contain only 1/4 the volume of 1 lg. cone

If the price for a small cone of popcorn is $1.20, what is a 'fair price' for a large one?

#1.20 x 8 = $9.60

True or False?

1. If you double just the width of a rectangular prism then **you double its volume** T	2. If you double just the width and height of a rectangular prism then **you double its volume** F
3. If you double the width, height, and length of a rectangular prism then **you double its volume** F	4. If you double the radius of a circle then **you double its circumference** T
5. If you double the radius of a circle then **you double its area** F New area is 4x larger	6. If you double the radius of a sphere then **you double its surface area** F New surface area is 4x larger

Vocabulary list

True or False? (continued)

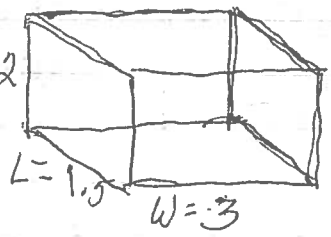
7. If you double the radius of a sphere then **you double its volume** F: New volume is 8x the original volume	8. If you double just the radius of a cylinder then **you double its curved surface area** T
9. If you double just the height of a cylinder then **you double its volume** T	10. If you double both the radius and height of a cylinder then **you double its volume** F - New volume is 4x original V
11. If you double just the base radius of a cone then **you double its volume** F, V is quadrupled, ie. 4x ~~done~~ the orig.	12. If you double both the height and base radius of a cone then **you double its volume** F The new volume is 8 x the original.

$\frac{1}{3}\pi r^2 h$

large $(\frac{1}{3})(3.14)(4^2)(12) = 200.96$

small $(\frac{1}{3})(3.14)(2^2)(6)(2) = 50.24$

$V = lwh$
$V = (1.5)(3)(2)$
$V = 9$ cu. u



$L = 1.5$
$W = 3$
$h = 2$

$V = lwh$
$V = 1.5 \times 6 \times 2$
$V = 18$ cu u

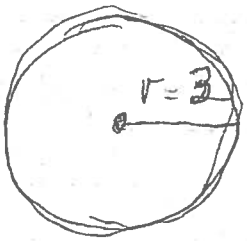
$V = (1.5)(6)(4)$
$V = (1.5)(24)$
$V = 36$ cu u

$V = (3)(6)(4)$
$V = (18)(4)$
$V = 72$

Circles

$C = 2\pi r$ or πd
$C = 2(3.14)(3)$
$C = 18.84$ u

$C = \cancel{\pi d}\ 2\pi r$
$C = 2(3.14)(6)$
$C = 37.68$



$\begin{array}{r} {\scriptstyle 1\ 1} \\ 18.84 \\ \times\ \ 2 \\ \hline 37.68 \end{array}$

$A = \pi r^2$
$A = (3.14)(3^2)$
$A = 28.26\ u^2$

$A = \pi r^2$
$A = 3.14(6^2)$
$A = 113.04$

Spheres

$SA = 4\pi r^2$
$SA = 4(3.14)(3^2)$
$SA = (12.56)(9)$
$SA = 113.04$

$SA = 4\pi r^2$
$= 4(\cancel{3.14}\ 12.56)(6^2)$
$= \cancel{4}\ (12.56)(36)$
$= 452.16$

$V = \frac{4}{3}\pi r^3$

$V = (\frac{4}{3})(3.14)(3^3)$

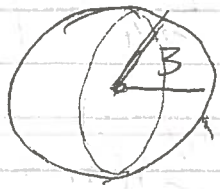
$V = 113.04\ u^3$

$V = \frac{4}{3}\pi r^3$

$V = \frac{4}{3}(3.14)(6^3)$

$V = \frac{4}{3}(3.14)(216)$

$V = 904.32$



$r = 3$

Curved $SA = 2\pi rh$

$SA = 2(3.14)(3)(4)$

$SA = (6.28)(12)$

$SA = 75.36$

$CSA = 2\pi rh$

$= 2(\pi)(6)(4)$

$= (6.28)(24)$

$= 150.72$

$CSA = 2\pi rh$

$= 2(3.14)(3)(8)$

$= (6.28)(24)$

$=$

$V = \pi r^2 h$

$V = (3.14)(9)(4)$

$= (3.14)(36)$

$= 113.04$

$V = \pi r^2 h$

$V = (3.14)(9^2)(4)$

$V = (3.14)(81)(4)$

$V = 1017.36$

Let $h = 8$

$V = \pi r^2 h$

$V = (3.14)(3^2)(8)$

$V = (3.14)(9)(8)$

$V = 3.14 \times 72$

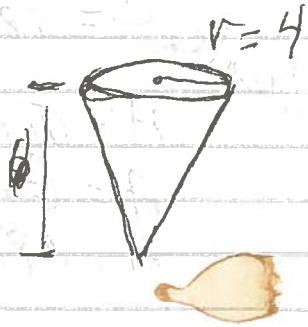
$V = 226.08$

let $r = 6$, $h = 8$

$V = \pi r^2 h$

$V = (3.14)(36)(8)$

$V = 904.32\ u^3$



$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}(3.14)(4^2)(6)$

$V = \frac{1}{3}(3.14)(16)(6)$

$V = 100.48\ u^3$

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}(3.14)(8^2)(6)$

$V = \frac{1}{3}(3.14)(64)(6)$

$V = 401.92\ u^3$

let $h = 12$, and $r = 8$

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}(3.14)(8^2)(12)$

$V = \frac{1}{3}(3.14)(64)(12)$

$V = 803.84$