## This first page is optional.

Math 10
Final Review ("Warm Up")

Name
Date: $\qquad$

Chp 1. Conversions between Metric and Imperial Units

1. Convert each measurement to the nearest tenth.
a) 16 in $=$ $\qquad$ cm
b) $5 \mathrm{yd}=$ $\qquad$ m
c) $6 \mathrm{mi}=$ $\qquad$ km
d) $19 \mathrm{~m}=$ $\qquad$ ft
e) $150 \mathrm{~km}=\ldots \quad \mathrm{mi}$
f) $10 \mathrm{lb}=$ $\qquad$ kg

## 2. Convert Between SI Units for Area

Determine the area of each rectangle for the given square unit
a) area: $\qquad$ $\mathrm{cm}^{2}$

b) area: $\qquad$ $\mathrm{ft}^{2}$

c) area: $\qquad$ $\mathrm{mm}^{2}$


Chp 2. Surface Area and Volume

1. Find the surface area and volume for each 3-D figure.
a) SA
Volume


c) SA
Volume___
d) SA
Volume $\qquad$

2. The surface area of a sphere is $459 \mathrm{~cm}^{2}$. Find the diameter.


## Remember to check your calculator first!

## Chp 3. Trigonometry: $\mathrm{SOH}-\mathrm{CAH}-\mathrm{TOA}$

1. Solve the following.
a) $\tan 72^{\circ}=$
b) $\quad \sin 42^{\circ}=$
c) $\cos 68^{\circ}=$
d) $\tan \mathrm{A}=2.580$
e) $\sin \mathrm{A}=0.4384$
f) $\cos \mathrm{A}=0.2079$
2. Find the unknown values.

$$
\begin{aligned}
& \angle \mathrm{A}= \\
& x= \\
& y= \\
&
\end{aligned}
$$


3. Solve the following angles and lengths.
$\qquad$
$\angle \mathrm{A}=$ $\qquad$
$B C=$ $\qquad$

$\mathrm{AD}=$ $\qquad$
4. Determine the height of the building if the angle of depression is $40^{\circ}$. The building is 12 feet from the house.
horizontal


## Chp 4. Exponents and Radicals

1. Determine whether each of the following is a perfect square, perfect cube, both or neither.
a) 196 $\qquad$ b) 81 $\qquad$ c) 343
$\qquad$
2. Determine the prime factorization for each value.
a) 200
b) 729 $\qquad$
3. Evaluate.
a) $\sqrt{289}$
b) $\sqrt[3]{5832}$

Convert from a power to a radical
a) $64^{1 / 2}$
b) $16^{3 / 4}$
c) $\left(8 x^{2}\right)^{1 / 3}$
5. Convert from a Radical to a Power.
a) $\sqrt[4]{4^{3}}$
b) $\sqrt[5]{3^{4}}$
c) $\sqrt{y^{3}}$
a) $5 \sqrt{11}$
b) $2 \sqrt[3]{5}$
c) $1.5 \sqrt[3]{6}$

1. Convert Entire Radicals to Mixed Radicals
a) $\sqrt{27}$
b) $\sqrt{50}$
c) $\sqrt[4]{80}$
2. Write each expression with positive exponents.
a) $3 c^{-4}$
b) $\left(\frac{4}{7}\right)^{-2}$
c) $\frac{2^{-3}}{3^{-2}}$
d) $-5 x^{-3} y^{-2}=$
3. Simplify each expression. State the answer using positive exponents.
a) $\left[(4)\left(2^{-3}\right)\right]^{-2}$
b) $\left(-3 m^{2} n\right)\left(-4 m^{4} n^{-2}\right)$
c) $\left(\frac{6 m n^{3}}{4 m^{2} n}\right)^{2}$
d) $\frac{\left(4 x^{\frac{1}{3}}\right)^{\frac{1}{2}}(9 x)^{-\frac{3}{2}}}{(27 x)^{-\frac{1}{3}}}$
e) $\frac{\left(q^{-\frac{2}{3}}\right)\left(q^{\frac{1}{3}}\right)}{q^{\frac{4}{3}}}$

## Chp 5. Polynomials

Note that all tiles are
1.What product does the diagram below represent? A ACK.

2. Find the product .
a) $(x-3)(2 x+1)$
b) $(5 m-1)(2 m-3)$
c) $(x+2)\left(2 x^{2}-5 x+1\right)$
d) $(x+14)(x-14)$
e) $(y+10)^{2}$
f) $(8-m)^{2}$
3. Factor the polynomials.
a) $15 x^{2}+10 x^{2}$
b) $7 a^{2} b-28 a b+14 a b^{2}$
c) $3 x(x-4)+5(x-4)$
d) $y^{2}+8 x y+2 y+16 x$
e) $x^{2}+4 x+6$
f) $x^{2}-29 x+28$
g) $3 x^{2}+2 x+4$
h) $6 x^{2}-5 x y+y^{2}$
4. Factor these special polynomials: Difference of Squares and Perfect Squares
a) $x^{2}-9$
b) $25 a^{2}-16 c^{2}$
c) $x^{2}-6 x+9$
d) $2 x^{2}-44 x+242$
e) $16 x^{2}-4 y^{2}$
f) $9 x^{3}-36 x$

## Chp 6. Relations and Functions

1. Use set notation to determine the domain and range of each relation.
a)


Domain:
b)


Domain:
Range:
c)


Domain:

Range:
2. For the function $f(x)=3 x+7$, determine
a) $f\left(\frac{1}{3}\right)$
b) $f(-2)$
c) $x$ if $f(x)=34$
3. For the function $g(x)=\frac{1}{4} x+\frac{3}{4}$, determine
a) $g(5)$
b) $g(-3)$
c) $x$ if $g(x)=-\frac{3}{2}$
4. Use the slope formula to determine the slope of the line passing through each pair of points.
a) $\mathrm{A}(2,-1), \mathrm{B}(3,4)$
b) $\mathrm{C}(0,7), \mathrm{D}(-3,7)$
c) $\mathrm{G}(4,-2), \mathrm{H}(4,-5)$

## Chp 7. Linear Equations and Graphs

1. Determine the equation of each line.
a)

b)

c)

2. Determine the slope and $y$-intercept of each line.
a) $4 x+2 y=12$
b) $3 x-2 y-600=0$
3. Given the equation $y=4 x+b$, and a point on the graph of a line, find $b$.
a) $(2,4)$
b) $(-3,7)$
4. Convert slope-intercept form to the General Form.
a) $y=\frac{-2}{3} x+6$
b) $y=\frac{3}{4} x-2$
5. Given the following equation, find the $x$-intercept and $y$-intercept. Then graph each equation on the grid.
a) $y=7 x+9$
b) $4 x-6 y-12=0$
6. Write the equation of a line, given a point on the line and the slope, $m$.

a) $\operatorname{Given}(-2,5)$ and slope $=-3$
b) $\operatorname{Given}(3,-4)$ and slope $=2$
7. State whether the lines in each pair are parallel, perpendicular or neither.
a) $y=4 x+3$
$y=4 x-5$
b) $y=3 x-6$
$y=-2 / 3 x+4$
c) $y=2 x+6$
$6 x+3 y+3=0$
8. Write an equation perpendicular to $y=3 x-4$ and passes through $(6,5)$
9. Write an equation perpendicular to: $2 x-y+4=0$ and passes through ( $1,-6$ )
\#8 and \#9: Also find the equation of the parallel line.

## Chp 8. Solving Systems of Linear Equations Graphically

1. Is the given point a solution to the system of linear equations? Justify your answer.
a) $y=5 x+13$ $y=-7 x-35$
$(4,7)$
b) $4 x-5 y=20 \quad(-5,-8)$
$x+3 y=-29$
2. Predict the number of solutions for each system of linear equations. Justify your answers.
a) $y=5 x-1$
b) $\begin{aligned} & 2 x+3 y=20 \\ & 6 x-y=20\end{aligned}$
c) $x-5 y=1$
$-x+5 y=1$
3. In the system of linear equations $y=8 x+5$ and $y=8 x+b$, what values of $b$ will result in a system that has
a) no solution?
b) an infinite number of solutions?
4. Graph the system of linear equations on the grid. Determine the solution to the system.

$$
\begin{aligned}
& 3 x+4 y=17 \\
& x-2 y=-1
\end{aligned}
$$



## Chp 9. Solving Systems of Linear Equations Algebraically

1. Solve
a) $y=-5 x-8$
$y=4 x+1$
2. Solve 1
a) $5=6 x+2 y$
$2 y=x+5$
b) $x+y=9$

$$
-10 x+6 y=6
$$

b) $3 x+2 y=0$
$8 x+7 y=5$
c) $\frac{x}{2}+\frac{y}{3}=6$

$$
3 x-2 y=12
$$

c) $\frac{1}{2} x-\frac{3}{2} y=-4$ $x+7 y=12$
3. A small plane took 3 hours to fly 960 km from Ottawa to Halifax with a tailwind. On the return trip, flying into the wind, the plane took 4 hours. Find the wind speed and the speed of the plane in still air.

Equation 1 $\qquad$
$\qquad$
Equation 2:

Wind speed
Plane speed
$\qquad$
-

$$
5
$$ .

4. A spa is offering two deals. Clients can get five facials and three manicures for $\$ 128$, or two facials and three manicures for $\$ 62$. What are the special prices of a facial and a manicure? ( 2 marks)

Equation 1: $\qquad$
Equation 2: $\qquad$ -

Facial
Manicure $\qquad$
5. For a spirit rally, students on the school baseball team sell T-shirts. The cost of the T-shirts includes a $\$ 500$ design fee plus $\$ 5$ per T-shirt. They plan to sell the T-shirts for $\$ 25$ each. The break-even point is when the cost to design and purchase the items equals the money earned by selling the items. How many T-shirts must the team sell in order to break even?

Equation 1 (Cost):
Equation 2 (Money earned): $\qquad$

