EQAO Review

1. What is the value of $2(3)^3-(3)^2$?

a) 12 b) 45 c) 63 d) 207

2. Select the option that correctly completes this statement.

Between the numbers 6 and 7, there are

a) Only integers b) only irrational numbers

c) infinitely many integers d) infinitely many real numbers

3. Karl invests $100 in a savings account, which earns interest yearly.

Select the **two** changes that would earn Karl **more** money from this savings account.

a) The bank decreases the interest rate.
b) Karl increases his initial investment.
c) The bank adds a fee to keep the account active.
d) Karl deposits more money into the account every year.

4. What is a simplified form of the expression
$2x(2x-3)-3x(x-2)$?

a) x^2 b) x^2-5 c) x^2-12 d) $7x^2-12x$

5. The line represented by the equation $y = -\frac{3}{2}x$ is translated up 3 units.

After the translation, what are the coordinates of the *y*-intercept of the new line

a) (0,3) b) (0,-3) c) (0,2) d) (0,6)

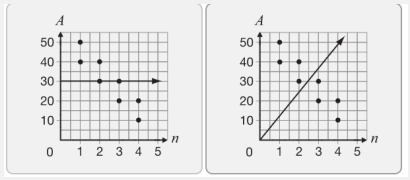
6. A store owner wants to know which flavour of juice has the highest number of sales.

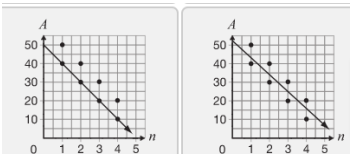
Which information would **best** help the store owner answer this question?

a) total sales of one flavour of juice for one week
b) sales of juice by flavour for one hour
c) sales of juice by flavour for one month
d) total sales of juice for one year

7. Which graph shows the most appropriate line of best fit for the data?

a) b) c) d)





8.The equation C=60t+30 represents the relationship between the total cost to repair a refrigerator, *C*, in dollars, and the repair time, *t*, in hours.

Which statement about this relationship is true?

a) The hourly rate is $90/h
b) The fixed fee is $90
c) The hourly rate is $60 and the fixed fee is $30
d) The hourly rate is $30 and the fixed fee is $60

9.A cylinder has a diameter of 20 cm and a height of 60 cm.Which expression represents the volume of a cone with the same dimensions?

$\frac{1}{3}\pi(10)^2(60)$	$\frac{1}{3}\pi(20)^2(60)$
$3\pi(10)^2(60)$	$3\pi(20)^2(60)$

10. Sam has *x* number of trading cards.

Alesia has double the number of cards as Sam has, plus 20 more cards.

Farid has triple the number of cards as Alesia has. In total, they have 350 cards.

What equation represents the total number of cards for all three people?

a) 5x+43=350 b) 5x+80=350 c) 9x+40=350 d) 9x+80=350

Solutions 1 b 2 d 3 b and d 4a 5 a 6 c 7 d 8 c 9 top left 10 d

Check Your Understanding 6.1 Name:_____
Start in column 1.

🔥	🔥🔥	🔥🔥🔥
Simplify by writing as a single power.	Simplify by writing as a single power.	Simplify by writing as a single power.
a) $(5^3)(5^2)$	o) (4)(4)(4)(4)(4)	cc) $(-3x^5)^4$
b) $(2^4)(2^3)$	p) $(4^3)(4^5)$	dd) $(2x^4)^3$
c) $(2^4)(2)$	q) $(4x^4y)(5x^3y)$	ee) $(10x^6)^2$
d) $(x)(x)(x)(x)$	r) $(-4x^4)(2x^2)$	ff) $(4x^3)^2$
e) $(x^3)(x^2)$	s) $(5^3)(4^6)(5^2)(4^2)$	gg) $(3^{10})^2(3^6)$
f) $(2^3)^4$	t) $(x^2)(y)(y^5)(x^8)$	hh) $(4^5)^6(4^2)(4)$
g) $(4^2)^3$	u) $(3x^5)^2$ be careful This means $(3x^5)(3x^5)$	ii) $(4^5)^2(4^2)(4^7)^2$
h) $(3^2)^4$	v) $(-3x^5)^2$	jj) $(y^2)^4(x)^2(x^4)^6(y^3)^3$
i) $(3^4)^2$	w) $(-3x^5)^3$	
SHOW why these statements are TRUE		
j) $(4^2)(4^3) = 4^5$	x) $(-4x^2)(-2x^3) = 8x^5$	kk) $(6x^4)^2 \neq 12x^8$
k) $(2^2)(2^5) \neq 2^{10}$	y) $(2^2)(2) \neq 2^2$	
Fill in the boxes to make each statement true.		
l) $(2^{\square})(2^4) = 2^7$	z) $(7^{\square})(7^4)(7) = 7^8$	ll) $(4^3)^2(4^{\square})^2 = 4^{20}$
m) $(7^{\square})(7^4) = 7^5$	aa) $(5^{\square})(4^3)(4^{\square})(5^6) = 5^8 4^{10}$	

Solutions 🔥 a) 5^5 b) 2^7 c) 2^5 d) x^4 e) x^5 f) 2^{12} g) 4^6 h) 3^8 i) 3^8 j) (4)(4)(4)(4)(4) k) (2)(2)(2)(2)(2)(2)(2)=2^7 l) 3 m) 1 n) $3^2(3^8)$ or $(3^2)^5$ or $(3^5)^2$ or $3^6(3^4)$

🔥🔥 o) 4^5 p) 4^8 q) $20x^7y^2$ r) $-8x^6$ s) 5^54^8 t) $x^{10}y^6$ u) $9x^{10}$ v) $9x^{10}$ w) $-27x^{15}$ x) (-4)(-2)xxxxx y) (2)(2)(2)=2^3 z) 3 aa)5^2 and 4^7

🔥🔥🔥 cc)$81x^{20}$ dd) $8x^{12}$ ee) $100\ x^{12}$ ff) $16x^6$ gg) 3^{26} hh) 4^{33} ii) 4^{26} jj) $y^{17}x^{26}$ kk) $(6x^4)(6x^4)=36x^8$ ll)7

Check Your Understanding 6.2 Start in the first column.

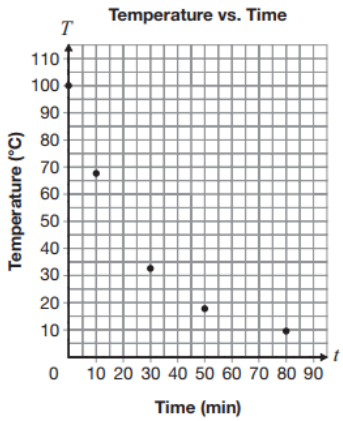
🔥	🔥🔥	🔥🔥🔥
Simplify by writing as a single power.	Simplify by writing as a single power.	Simplify by writing as a single power.
a) $\frac{6^5}{6^3}$	l) $\frac{x^7}{x^5}$	w) $\frac{3^2\left(4^3\right)\left(3^5\right)(4)}{3^4 4^2}$
b) $\frac{10^{12}}{10^4}$	m) $\frac{10x^6}{5x^2}$	x) $\frac{x^6\left(y^3\right)\left(y^2\right)\left(x^2\right)}{x^8 y^4}$
c) $\frac{3^7}{3^2}$	n) $\frac{5x^7}{10x^5}$	y) $\frac{a^3 b^2 ab}{a^4 b^3}$
d) $\frac{3^7}{3}$	o) $(-2x^5)(-5x^3)$	z) $(-2x)(-3y)$
e) $(2^2)(2^3)$	p) $(6x^2)(4x^2)$	aa) $\left(4x^2 y\right)\left(3x^7 y\right)$
f) $(2^3)(2^3)$	q) $\left(5x^3\right)^2$	bb) $\frac{\left(4x^5 y\right)^2}{2x^2 y^4}$ take a step at a time: simplify numerator and then divide at the end.
g) $(4^{10})^3$	r) $\left(-5x^3\right)^2$	cc) $\frac{\left(x^4 y^2\right)^3}{x^{10} y}$
h) $(5^5)^5$	s) $\left(-5x^4\right)^3$	dd) $\frac{\left(5x^3 y^2\right)^2\left(x^4 y^2\right)}{x^{10} y^3}$
SHOW why these statements are TRUE		
i) $\frac{2^5}{2^2}=2^3$	t) $\frac{2^6}{2^2}\neq 2^3$	ee) $\frac{\left(2^3\right)^2\left(2^4\right)}{2\left(2^5\right)}=2^4$
Fill in the boxes to make each statement true.		
j) $\frac{4^{\square}}{4^2}=4^8$	u) $\frac{4^6\left(4^5\right)}{4^{\square}}=4^2$	ff) $\frac{\left(4^8\right)\left(4^2\right)}{4^6}=\frac{4^{\square}\left(4^{12}\right)}{4^{10}}=4^{\square}=\left(4^{\square}\right)(4^3$
k) $\frac{4^6}{4^{\square}}=4^2$	v) $\frac{4^{\square}\left(4^5\right)}{4^{10}}=4^7$	gg) $\frac{\left(3^7\right)\left(3^2\right)}{\left(3^{\square}\right)(3)}=3^6=\frac{3^{\square}}{3^2}=\left(3^2\right)^{\square}$
Using the numbers 1-9 only once each, how many different ways can you make the statement true?		
$\frac{2^{\square}}{2^{\square}}=2^{\square}$	$\frac{2^{\square}2^{\square}}{2^{\square}}=2^{\square}$	$\frac{3^{\square}2^{\square}}{2^{\square}3^{\square}}=2^{\square}3^{\square}$

Solutions a) 6^2 b) 10^8 c) 3^5 d) 3^6 e) 2^5 f) 2^6 g) 4^{30} h) 5^{25} ij) 10 k) 4 l) x^2 m) $2x^4$ n) ½ x^2 o) $10x^8$ p) $24x^4$ q) $25x^6$ r) $25x^6$ s) $-125x^{12}$ u) 9 v) 12 w) $3^3 4^2$ x) y y) 1 z) 6xy aa) $12x^9y^2$ bb) $8x^8$ cc) x^2 y^5 dd) $25y^3$ ff) 2 , 4,1 gg) 2, 8, 3

1. Which of the following is a simplified form of (–2m + 3) − (5m − 6)?

a 3m − 3 b 3m + 9 c –7m − 3 d –7m + 9

2. A pot of hot soup is placed in a refrigerator to cool. Information about the temperature of the soup at five different times is shown.



Which statement below is true based on the overall trend in the data?

a At 90 minutes, the temperature of the soup will be 0 °C.
b The temperature of the soup decreases at a constant rate.
c It takes approximately 18 minutes for the soup to cool to half its original temperature.
d There is a greater decrease in temperature between 50 and 80 minutes than between 10 and 30 minutes.

3. The total cost for an extra large pizza at a restaurant is $14.50, plus $1.25 for each topping. Which of the following equations represents the relationship between the total cost, C, in dollars, and the number of toppings, n?

a C = 1.25n b C = 15.75n c C = 1.25n + 14.50 d C = 14.50n + 1.25

4. Which one of the following tables shows information about a linear relationship.

a

x	y
−3	9
−2	6
−1	4
0	3

b

x	y
0	−5
1	−3
2	0
3	3

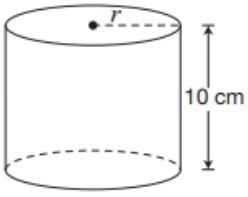
c

x	y
2	0
3	−2
4	−4
5	−6

d

x	y
−1	10
0	15
1	25
2	40

5. The cylinder pictured below has a volume of 500 cm^3 and a height of 10 cm.



Hint:
$V = \pi r^2 h$

Which of the following represents the radius of the cylinder, r, in centimetres?

a $\frac{\sqrt{50}}{\pi}$ b $\sqrt{\frac{50}{\pi}}$ c $\frac{50}{\pi}$ d $\frac{50}{2\pi}$

6. Which is a simplified form of this expression? $\frac{x^8(x^6)}{x^4}$

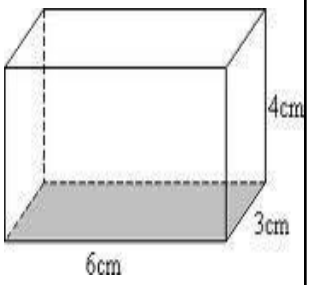
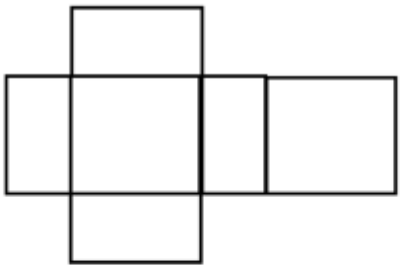
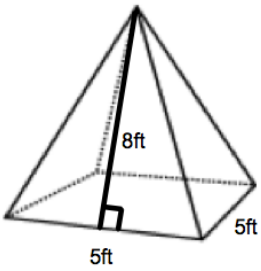
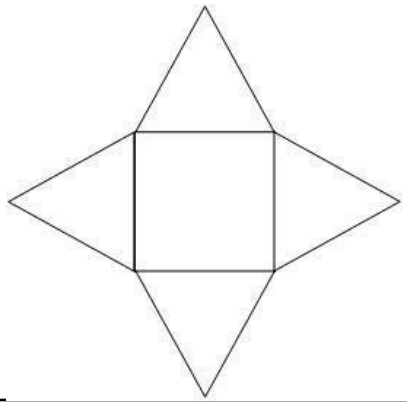
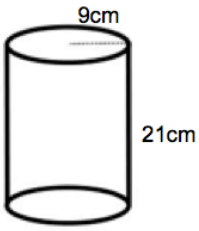
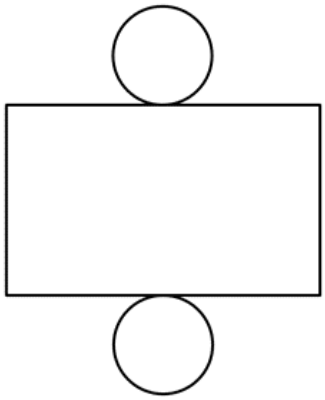
a x^8 b x^{10} c x^{12} d x^{18}

Solutions:
1d 2 c 3 c 4 c 5 b 6 b

6.3 Surface Area Assignment Name:_____

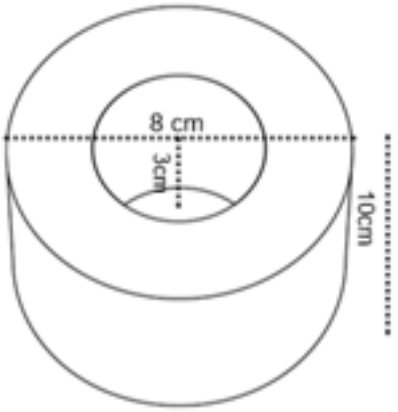
Area rectangle= lw Area circle = πr^2 **Area triangle=** $\frac{bh}{2}$

surface area cylinder= $2\pi r^2 + 2\pi rh$

	Net & Calculations
1. a) Rectangular Prism 	 Step 1: State formula Step 2: Sub in unknowns. Step 3: Solve with units.
b) Pyramid 	
c) Cylinder 	

solutions:

1a) 108 cm^2 b) 105 ft^2 c) 1696.5 cm^2

	Calculations
2. Calculate the surface area of the world's largest cup of coffee, without the handle. **NOTE: There is NO top to the cup.** Only the curved surface and the bottom. 	
3. Find the surface area if you were to paint the following cylinder that has a portion removed. 3 cm is the radius of the small circle and 8 cm is the <u>diameter</u> of the large circle 	

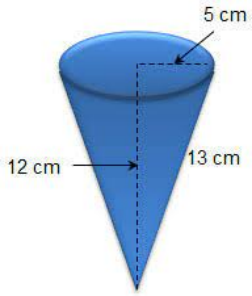
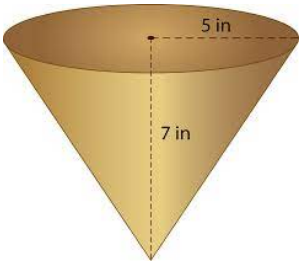
🔥	🔥🔥	🔥🔥🔥
4. Simplify by writing as a single power.	Simplify by writing as a single power.	Simplify by writing as a single power.
a) $\frac{3^5}{3^3}$	e) $\left(3^2\right)\left(x^5\right)\left(3^4\right)\left(x^2\right)$	i) $\frac{x^{10}y^2}{x^6y}$
b) $\left(3^5\right)\left(3^3\right)$	f) $\left(3x^5\right)^2$	j) $\frac{\left(x^4\right)\left(x^3\right)^2}{x^5}$
c) $\left(3^5\right)^3$	g) $\left(-4x^5y\right)^3$	k) $\frac{\left(x^4\right)\left(7x^3y\right)^2}{x^5y^2}$
d) $\left((3^{\square})\right)\left(3^4\right)=3^{10}$	h) $\frac{\left((3^{\square})\right)}{\left(3^4\right)}=3^{10}$	$\frac{\left((3^{\square})\right)^6\left(3^2\right)}{\left(3^4\right)}=3^{10}$

Solutions: 2. 192 cm^2 3. 484 cm^2 4a) 3^2 b) 3^8 c) 3^{15} d) 6 e) 3^6x^7 f) $9x^{10}$ g) $-64x^{15}y^3$ h) 14 i) x^4y j) x^5 k) $49x^5$ l) 2

6.4 Show Your Understanding **Name:**_____

Write as a single power in simplified form.

🔥	🔥🔥	🔥🔥🔥
$(3^8)^2$	$(4^2)(4^7)(4)$	$(4x^7y)^3$
$(3^8)(3^2)$	$\dfrac{(4^2)(5^8)}{(4^2)(5^4)}$	$\dfrac{(x^3)^2(y^4)^3}{x^2y^{10}}$
$\dfrac{3^8}{3^2}$	$(2^3)(2^4)^2(2^5)$	$\dfrac{(6x^3)^2(x^4)}{x^5}$

🔥	🔥🔥	🔥🔥🔥
Given:  a) Find the volume of the cone. Step 1: State formula. Step 2: sub in unknowns. Step 3: State answer with units. 1b) Find the surface area.	Given  Find the surface area of the entire cone. Be careful since you need the slant length.	Find the surface area of a cone with volume 500 cm^3 and radius is 6 cm.

Check Your Understanding 6.5
Start in column 1 and do AT LEAST 2 columns or more.

🔥🔥	🔥🔥	🔥🔥	🔥🔥
1. Write with a positive exponent and evaluate.	Write with a positive exponent.	Write with a positive exponent.	2. Write the following in standard form. a) 7×10^3 b) 3.45×10^4 c) 5.2×10^3 d) 8×10^{-3} e) 4.2×10^{-5} f) 8.45×10^{-6}
a) 2^{-3}	g) $\left(\frac{1}{4}\right)^{-1}$	m) 3^{-2}	
b) 3^{-1}	h) $\frac{1}{4^{-1}}$	n) 2^{-3}	
c) 4^{-2}	i) $\frac{1}{4^{-3}}$	o) 10^{-2}	
d) 5^0	j) $\left(\frac{2}{5}\right)^{-1}$	p) $\left(\frac{1}{3}\right)^{-2}$	Write the following using scientific notation. g) 5 000 000 h) 67 000 i) 67 2 00 j) 0.0004 k) 0.032 l) 0.0000081
e) 2^0	k) $\left(\frac{2}{5}\right)^{-2}$	q) $\left(\frac{4}{5}\right)^{-2}$	
f) 900^0	l) $\left(\frac{7}{3}\right)^{-1}$	r) $\left(\frac{4}{5}\right)^{-3}$	

Solutions:

1a) $\frac{1}{2^3}$ b) $\frac{1}{3}$ c) $\frac{1}{4^2}$ d) 1 e) 1 f) 1 g) 4 h) 4 i) 4^3 j) $\frac{5}{2}$ k) $\frac{5^2}{2^2}$ l) $\frac{3}{7}$ m) $\frac{1}{9}$ b) $\frac{1}{8}$ c) $\frac{1}{100}$ d) 9 e) $\frac{25}{16}$ f) $\frac{125}{64}$ 2a) 7000 b) 34500 c) 5200 d) 0.008 e) 0.000042 f) 0.00000845 g) 5×10^6 h) 6.7×10^4 i) 6.72×10^4 j) 4×10^{-4} k) 3.2×10^{-2} l) 8.1×10^{-6}

Name:_____

1. Write the following in standard form.	2. Write the following using scientific notation.	3. Which of the following is bigger? Explain your reasoning
a) 7×10^3	g) 8 000 000	5×10^3 or 5×10^{-3}
b) 8.5×10^6	h) 62 400	
c) 5.22×10^4	i) 97 100	5×10^3 or 5×10^{-3}
d) 9×10^{-3}	j) 0.0004	
e) 1.2×10^{-5}	k) 0.022	
f) 8.45×10^{-6}	l) 0.000054	

Solutions:
1a) 7000 b) 8 500 000 c) 52200 d) 0.009 e) 0.000012 f) 0.00000845
2g) 8×10^6 h) 6.2×10^4 i) 9.71×10^4 j) 4×10^{-4} k) 2.2×10^{-2} l) 5.4×10^{-5}

Name:_____

1. Write the following in standard form.	2. Write the following using scientific notation.	3. Which of the following is bigger? Explain your reasoning
g) 7×10^3	g) 8 000 000	5×10^3 or 5×10^{-3}
h) 8.5×10^6	h) 62 400	
i) 5.22×10^4	i) 97 100	5×10^3 or 5×10^{-3}
j) 9×10^{-3}	j) 0.0004	
k) 1.2×10^{-5}	k) 0.022	
l) 8.45×10^{-6}	l) 0.000054	

Solutions:
1a) 7000 b) 8 500 000 c) 52200 d) 0.009 e) 0.000012 f) 0.00000845
2g) 8×10^6 h) 6.2×10^4 i) 9.71×10^4 j) 4×10^{-4} k) 2.2×10^{-2} l) 5.4×10^{-5}

1W EQAO Practice Name;_____

1. The total cost of an extra large pizza is $14.50 plus $1.25 for each topping. Which of the following equations represents the relationship between the cost, C, in dollars and the number of toppings, n?
   a) C=1.25n
   b) C=15.75n
   c) C=1.25n+14.50
   d) C=14.50n+1.25

2 . Which of the following is a simplified form of (-2m+3)-(5m-6)

a) 3m-3
b) 3m+9
c) -7m-3
d) -7m+9

3. This table shows information about the total cost to rent a car and the distance driven.

Distance driven, d (km)	Total cost, C ($)
100	65
200	80
300	95
400	110

What information would the C-intercept and slope of the graph of this linear relationship give?

a) There is no fixed fee and the cost per km is $0.15.
b) There is no fixed fee and the cost per km is $0.65.
c) There is a $50 fixed fee and the cost per km is $0.15
d) There is a $50 fixed fee and the cost per km is $0.65

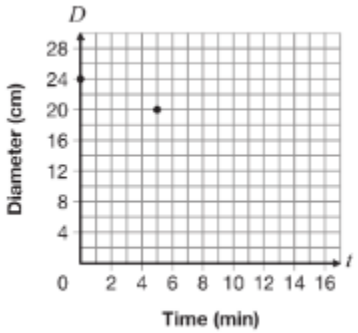
4. Cereal comes in two different boxes.

- Box A costs $5.25 for 250 g
- Box B costs $4.50 for 375 g

Which box is cheaper per gram and how much cheaper per gram is it?

a) Box B, $0.0009 per gram
b) Box B, $0.75 per gram
c) Box A, $0.033 per gram
d) Box A , $35.71 per gram

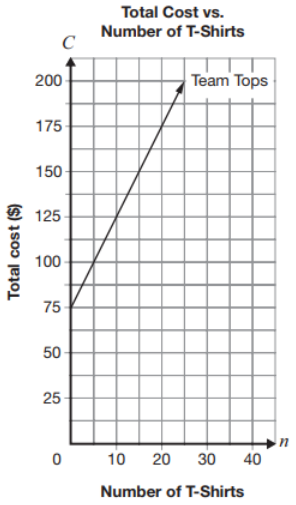
5. A class measures the diameter of a snowball as it melts. Information about the diameter at two different times is shown on the grid.



If this situation is modeled by a linear relationship what is the **total time** it will take the snowball to completely melt.

a) 30 minutes
b) 24 minutes
c) 20 minutes
d) 16 minutes

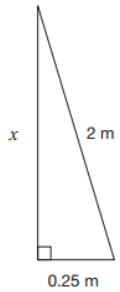
6. The total cost for T-shirts at Team Tops is made up of a set-up fee and a charge for each T-shirt as represented by the graph.



Super Shirts has no set-up fee but charges twice as much for each T-shirt as Team Tops. Which of the following statements is true?

a It is always cheaper to order from Super Shirts.
b It is the same price to order 150 T-shirts from either company.
c It is cheaper to order 10 T-shirts from Team Tops than from Super Shirts.
d It is more expensive to order 20 T-shirts from Super Shirts than from Team Tops.

7. Which equation correctly uses the Pythagorean theorem to determine the value of x in the diagram?



a $x = \sqrt{2 + 0.25}$

b $x = \sqrt{2 - 0.25}$

c $x = \sqrt{2^2 + 0.25^2}$

d $x = \sqrt{2^2 - 0.25^2}$

8. This table shows information about the linear relationship between Mahammad's total savings and the number of months he saves money.
Which of the following represents the relationship.

Number of months, n	Total savings, S ($)
3	345
6	540
9	735
12	930

a) S=65n+345
b) S=195n+150

c)

d)

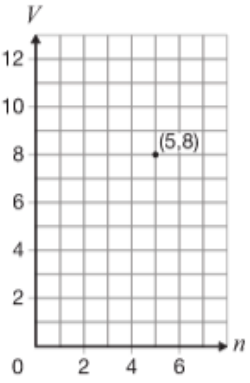
9. Which of these expressions is equivalent to (3x-4y) - (-5x+y)?
a) 8x-5y b) 8x-3y c) -2x-5y d) -2x-3y

10. Which is the simplified form of 3x(7x-2)
a) $21x^2-2x$ b) $21x^2-2$ c) $21x^2-6$ d) $21x^2-6x$

11. Ashwini's distance from home is represented by the equation D=-0.5t+300 where D represents his distance from home in km and t represents time in minutes. How long will it take Ashwini to reach a distance of 182 km from home?

a) 236 min
b) 209 min
c) 64 min
d) 59 min

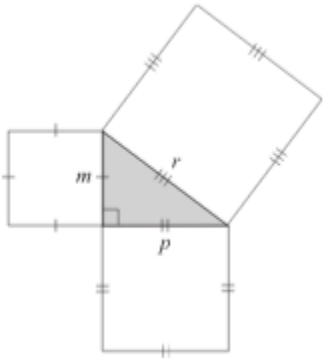
12. The point on the grid belongs ot a linear relation that has a rate of change of $-\frac{3}{2}$. What point is on the relation.



a) (2,6)
b) (2,10)
c) (3,11)
d) (7,11)

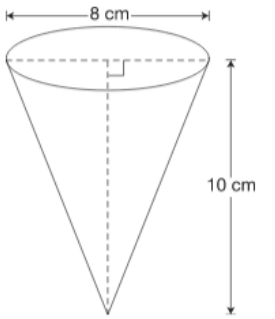
13. This diagram is made of a right triangle and 3 squares. Which of the following is represented by this diagram?

a) $p^2=r^2-m^2$
b) $p^2=m^2-r^2$
c) $r^2=p^2-m^2$
d) $r^2=m^2-p^2$



14. A open topped paper drinking cup is shown. What's the closest to the amount of paper to make the cup?

a) 185 cm^2
b) 167 cm^2
c) 135 cm^2
d) 126 cm^2

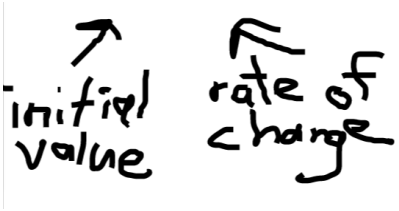
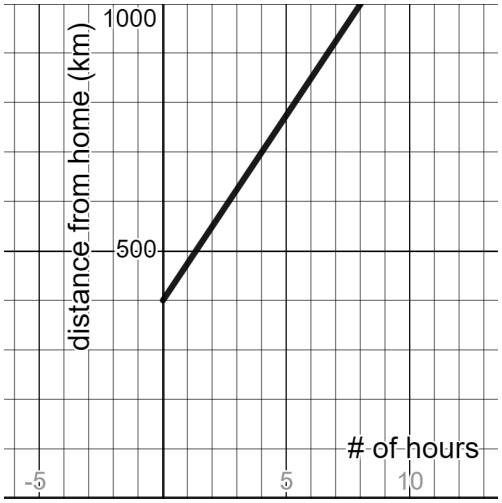


Solutions:
1a 2 d 3 c 4 a 5 a 6 d 7 d 8 d 9 a 10 d 11 a 12 c 13 a 14 c

Representations of linear Relations

<table>
<tr><th>Description in words</th><th>Equation</th><th>Table</th><th>Graph</th></tr>
<tr>
<td>You start 400 km from home and travel at 75 km/h away from home</td>
<td>Let D represent the distance in km

Let n represent the number of hours

D=400+75n
 
</td>
<td>
<table>
<tr><th># hours</th><th>Distance (km)</th></tr>
<tr><td>0</td><td>400</td></tr>
<tr><td>2</td><td>550</td></tr>
<tr><td>4</td><td>700</td></tr>
<tr><td>6</td><td>850</td></tr>
<tr><td>8</td><td>900</td></tr>
</table>
</td>
<td> 
</td>
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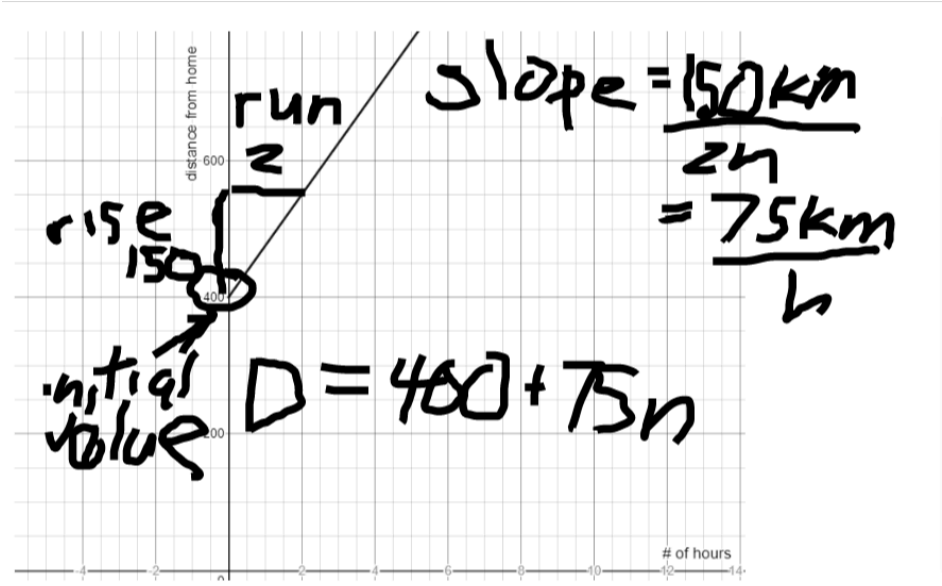
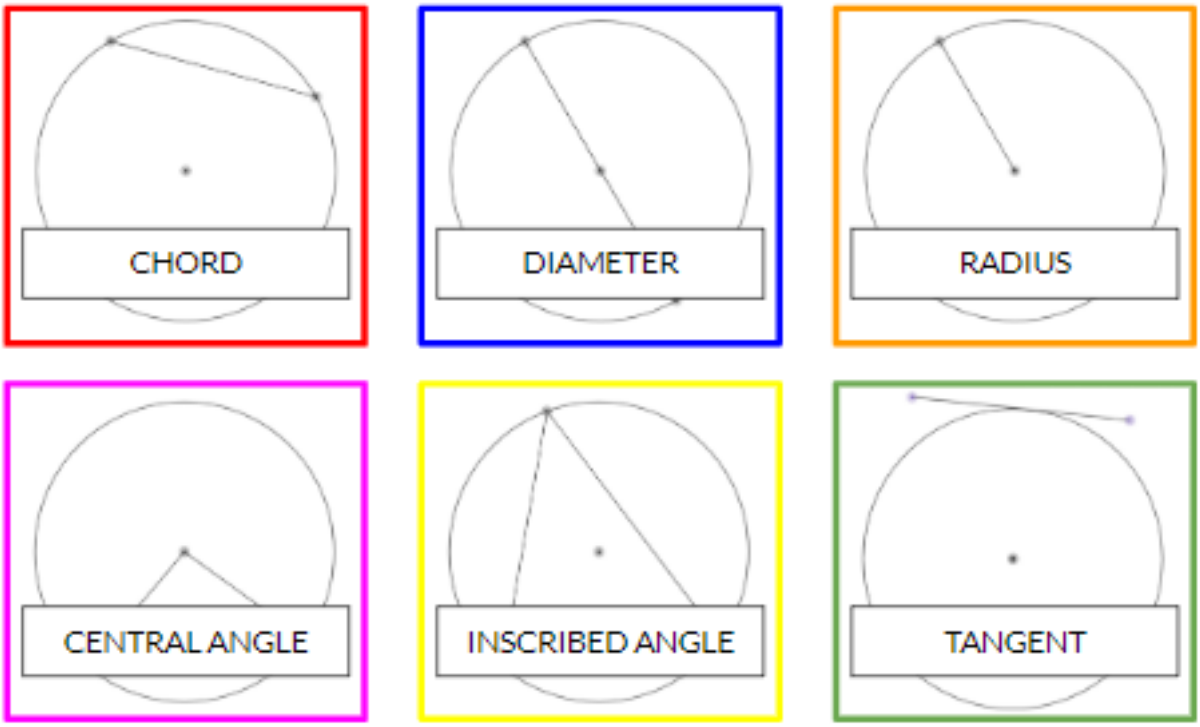
</table>

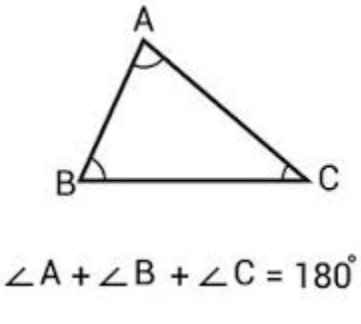


Prior Knowledge

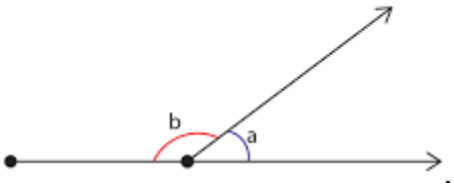


A central angle is an angle with its **vertex at the center of a circle and with sides that are radii of the circle**	An inscribed angle is a circle is **formed by two chords that have a common end point on the circle**

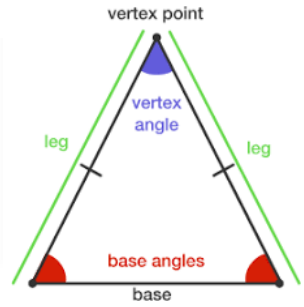
Geometry Principles



$\angle A + \angle B + \angle C = 180^{\circ}$



$a+b=180^{0}$



isosceles triangle: the base angles are equal

Circle Geometry

Task A

1. Place 2 points, A & B, on the circle.
2. Create an inscribed angle from A & B and a central angle from A & B.
3. Repeat with a new circle, placing A & B in different locations on the circle.
4. Measure each angle and record the results.
5. What do you notice?

Circle	Inscribed Angle	Central Angle
#1		
#2		

Task B

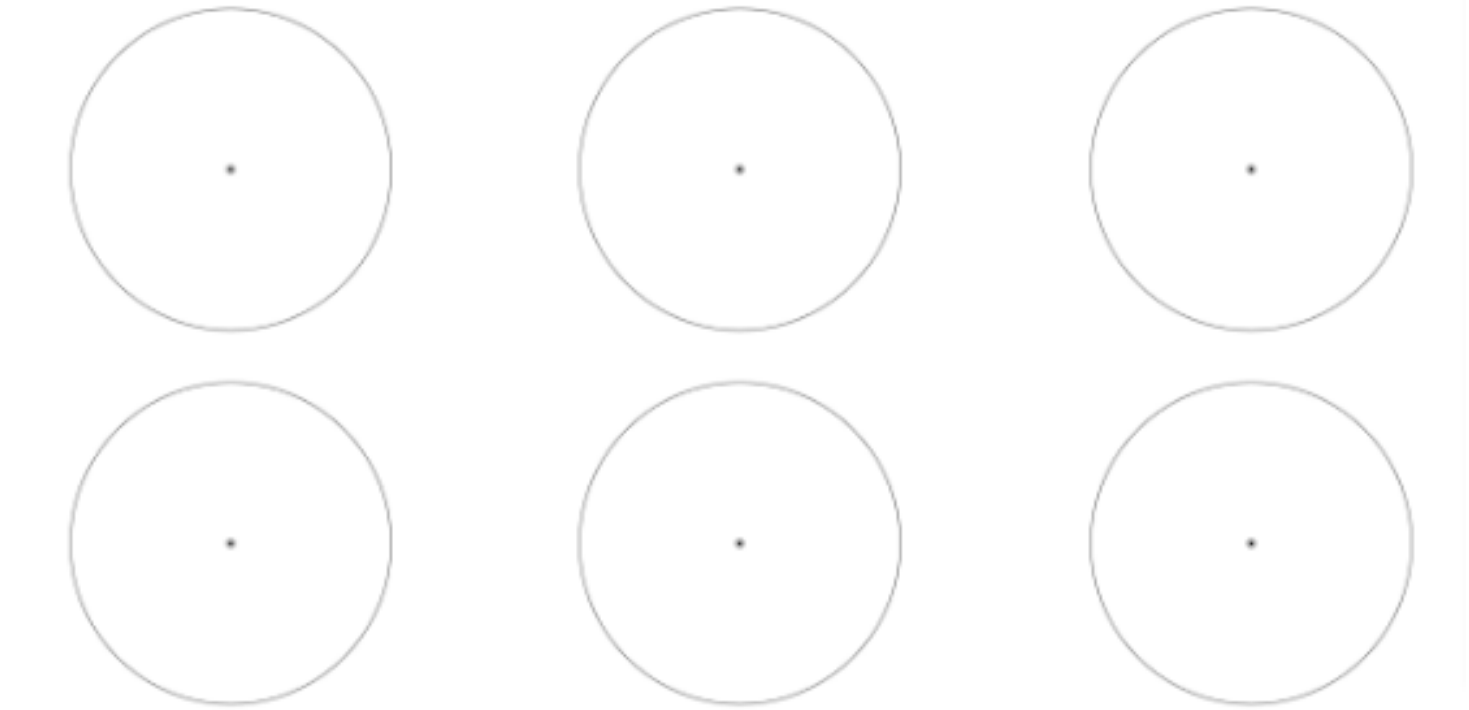
1. Draw a diameter through the centre of your circle. Call the endpoints A & B.
2. Place 1 point on the circle and label it C.
3. Draw triangle ABC.
4. Repeat with a new circle, placing C in a **different** location.
5. Measure angle C and record the results.
6. What do you notice?

Circle	Measurement of C
#1	
#2	

Task C

1. Place 2 points, A & B, on the circle.
2. Create 3 inscribed angles from A & B. Number each one.
3. Measure each angle and record the results.
4. What do you notice?

Inscribed Angle	Measurement
#1	
#2	
#3	



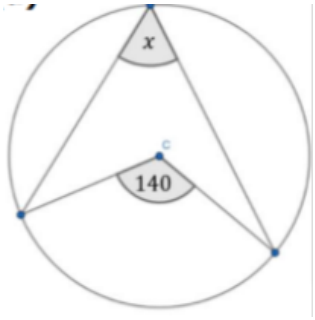
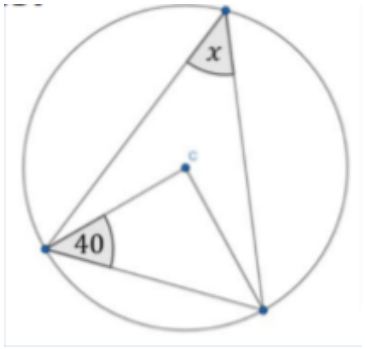
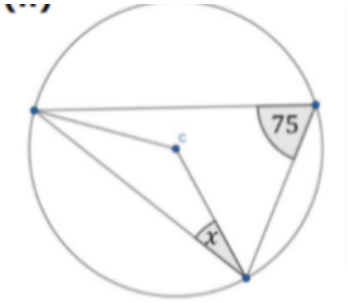
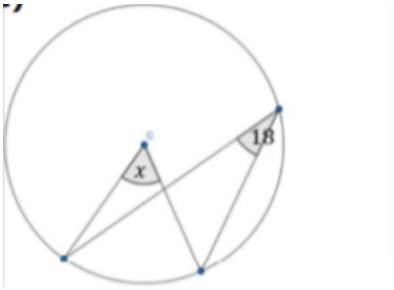
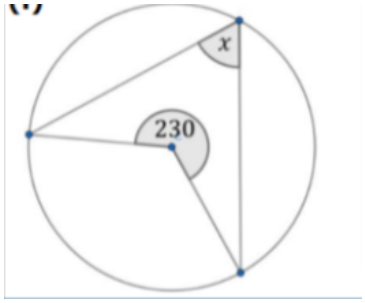
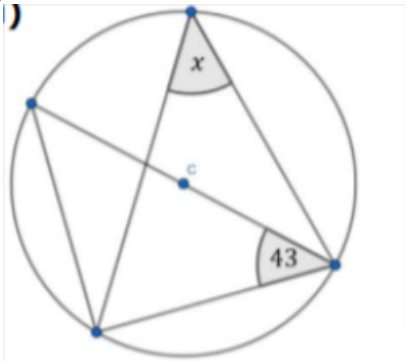
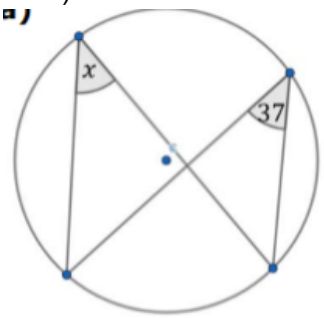
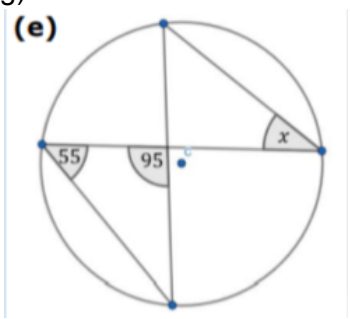
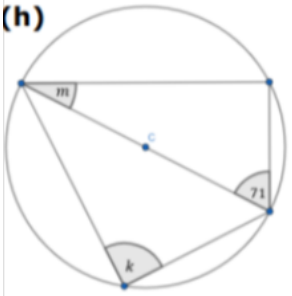
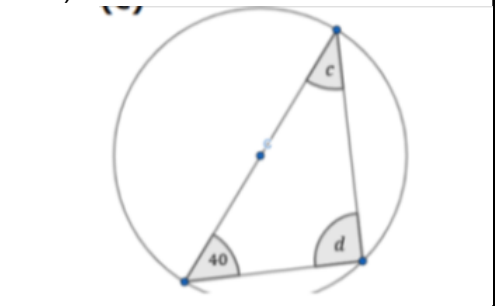
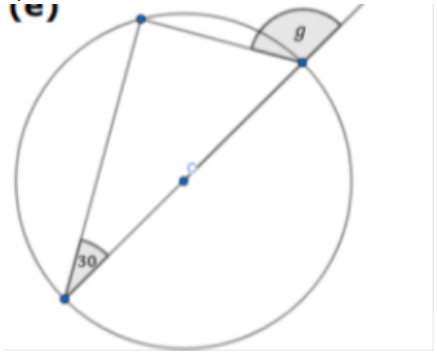
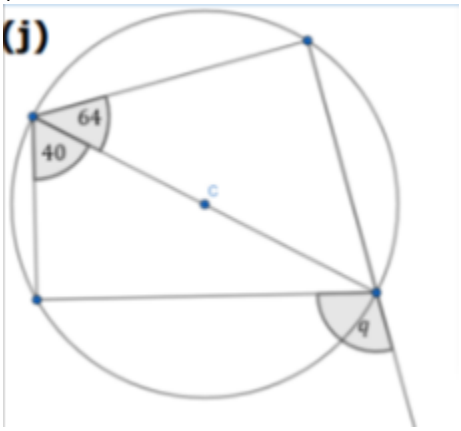
Conclusions:

Task A : The central angle is _____ the inscribed angle

Task B: Given the diameter of a triangle and you select and point the make a triangle it will ALWAYS be a _____ triangle

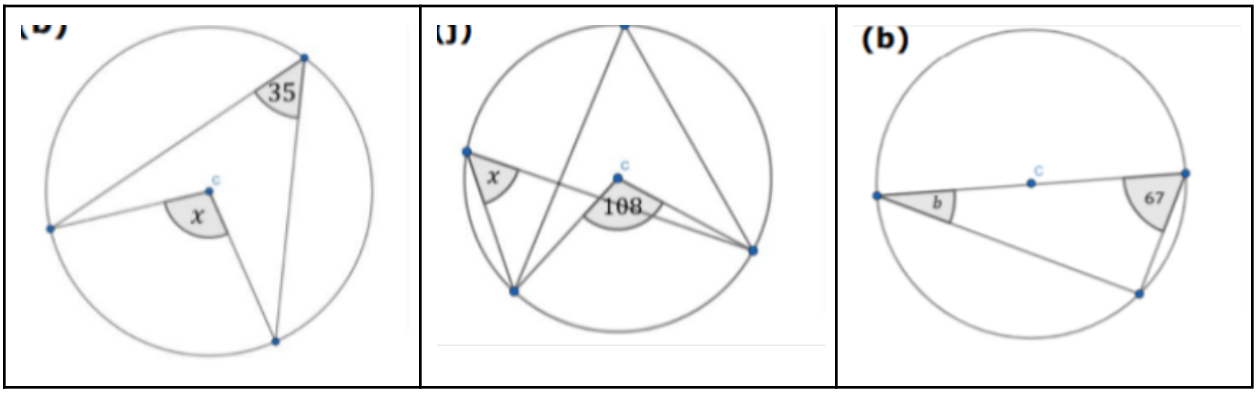
Task C: Given two points A and B that make any inscribed triangle in a circle the inscribed angles will be _____

Check Your Understanding

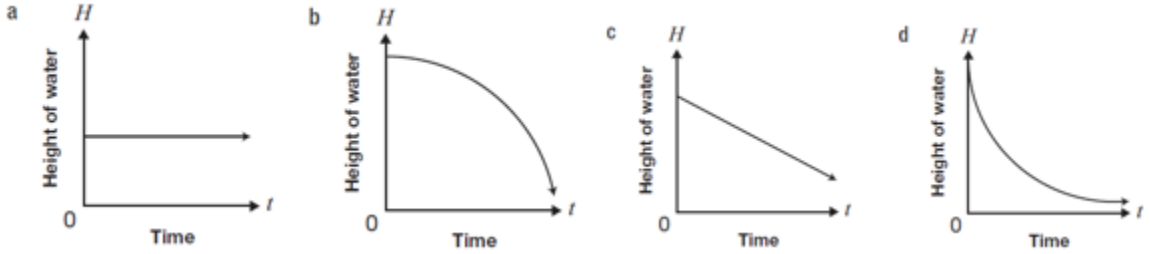
🔥	🔥🔥	🔥🔥🔥
a) 	e) 	i) 
b) 	f) 	j) 
c) 	g) 	k) 
d) 	h) 	l) 

Solutions: a) 70^0 b) 36^0 c) 37^0 d) $d=90^0$ 50^0 e) 50^0 f) 65^0 g) 30^0 h) 120^0 i) 15^0 j) 47^0 k) $m=19^0$ $k=90^0$ l) 104^0

2. Find the knowns.

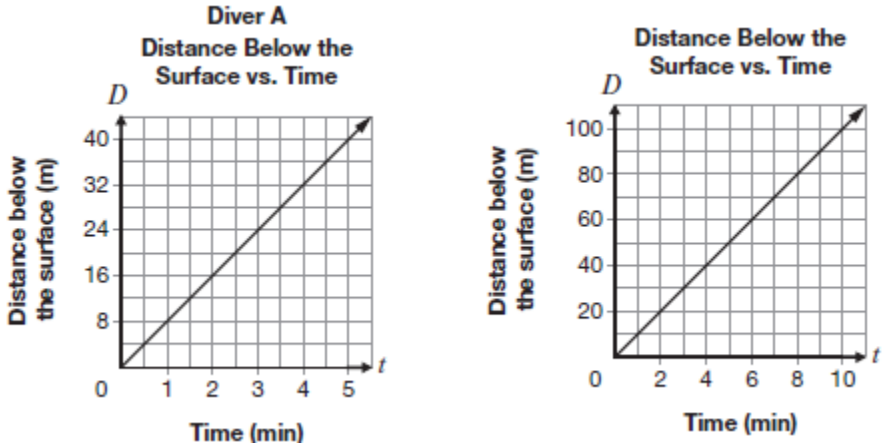


3. Rita measures the height of the water in a swimming pool as it is pumped out at a constant rate. Which graph best represents the height of the water?



Which table of values shows data from a linear relationship.

4. The relationship between the distance below the surface and time for two scuba divers is shown by the graphs below.



How much faster is diver B diving than diver A?

a 0m/min **b** 2m/min **c** 10m/min **d** 12m/min

5. The equation C=45+3d represents the relationship between total cost, C, in dollars and the number of days, d. Which of the following is true about this relationship?

a The total cost is $48 per day.
b The total cost is $45 for 3 days.
c The total cost is made up of $45 fixed fee and $3 per day.
d The total cost is made up of a $3 fixed fee and $45 per day.

6. The total cost of a cell phone plan, C, in dollars, is determined by the equation C=10+0.15n, where n is the number of texts sent. If 25 text messages are sent, what is the total cost?

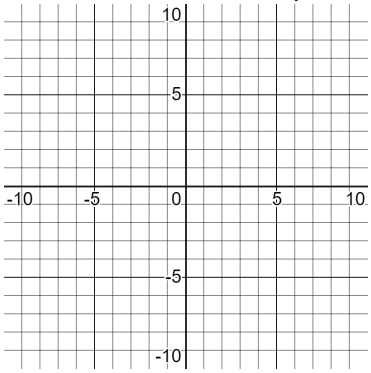
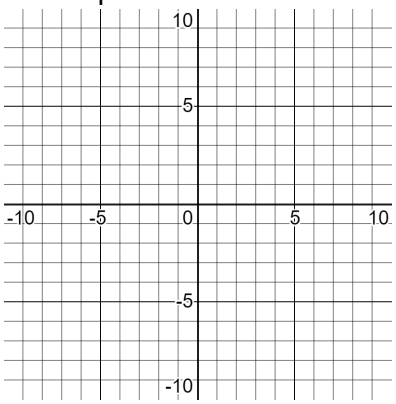
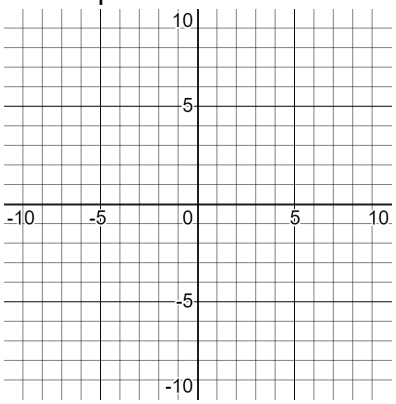
a $13.75 **b** $35.15 **c** $100.00 **d** $235.75

7. Which of the following ratios is equivalent to 2:5?

a 5:2 **b** 2:7 **c** 14:35 **d** 22:25

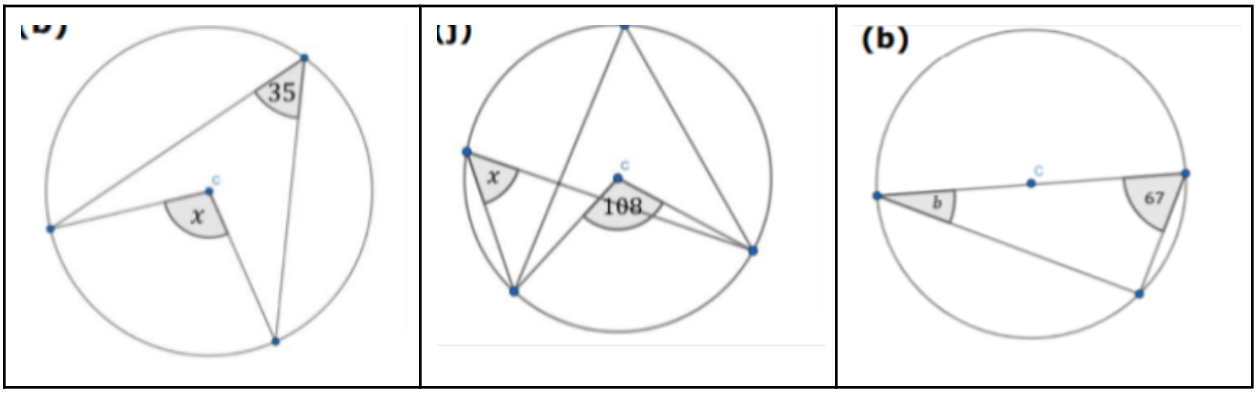
Solutions: 2a) 70^0 b) 54^0 c) 23^0 3. C 4 b 5 c 6 a 7 c

Check Your Understanding 6.10 Try 2 of the columns.

🔥	🔥🔥	🔥🔥🔥
1a) Find the equation of the line passing through the point (4,5) and with slope ½ Step 1: plot point Step 2: plot rise is 1 (up 1) and run is 2 (right 2) or down 1 and left 2 to find the vertical intercept  	d) Find the equation of the line through the point (6,1) with slope ⅔ x | y | | | 6 | 1 | |	g) Find the equation of the line passing through (5,2) with slope 3 y=3x+k and then sub in x=5 and y=2 and solve for k
b) Find the equation of the line passing through the point (-4,2) and with slope ½  	e) Find the equation of the line through the point (-3,-1) with slope -2 x | y | | | -3 | -1 | |	h) Find the equation of the line passing through (4,-3) with slope ½ (with fractions simplify first before rearranging equation)
c) Find the equation of the line passing through the point (-2,1) and with slope 3  	f) Find the equation of the line through the point (2,3) with slope 4 x | y | | 3 | 2 | |	i) Find the equation of the line passing through (5,2) with slope ⅔ (you will have fractions in your solution)

Solutions:1a) y=½ x+3 b) y= ½ x+4 c) y=3x+7 d) y= ⅔ x-3 e) y=-2x-7 f) y=4x-5 g) y=3x-13 h) y= ½ x-5 i) y=⅔ x-4/3

2. Find the knowns.



3. The air temperature of a mountain drops by 4 ℃ for every 1000 m of elevation.

If the air temperature is 25 ℃ at the base of the mountain, at what elevation will the air temperature be 17 ℃?

a) 1000m b) 2000 m c) 8000 m d) 4000 m

4. Information about two linear relations is given.

Relation 1

Number of days	Number of stickers
2	192
4	184
6	176

Relation 2

Number of days	Number of stickers
25	100
50	50
75	0

a) The line that represents Relation 2 starts higher on the vertical axis and descends less quickly than the line for Relation 1.

b) The line that represents Relation 2 starts lower on the vertical axis and descends more quickly than the line for Relation 1.

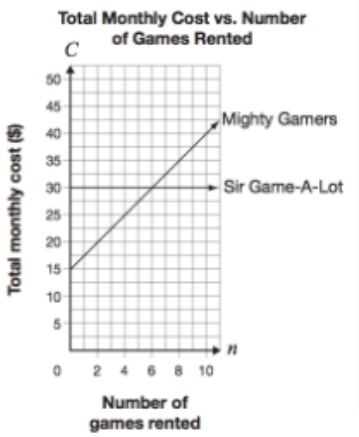
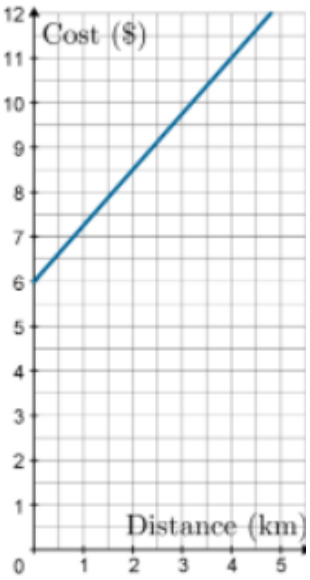
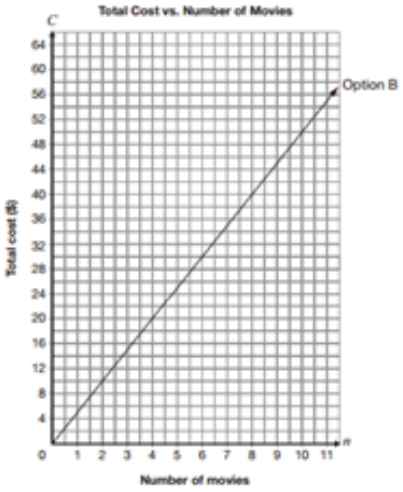
c) The line that represents Relation 2 starts higher on the vertical axis and descends less quickly than the line for Relation 1.

d) The line that represents Relation 2 starts lower on the vertical axis and descends less quickly than the line for Relation 1.

5. Each side length of Cube A is 4 cm long.
Each side length of Cube B is triple the side length of Cube A.
How many times greater is the volume of Cube B than that of Cube A?

a) 1664 times b) 192 times c) 27 times d) 9 times

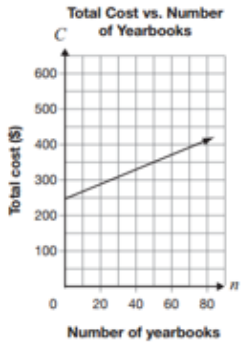
solutions:
2a) 70^0 b) 54^0 c) 23^0 3. b 4. d 5. c

🔥	🔥🔥	🔥🔥🔥
1. Data about the cost two online game sites is shown below.  What advice would you give? When is one more expensive than the other? 2. The data of an Uber is shown below  Find the equation:_____ A different taxi company charges an initial fee of $6 and $0.75 per km. State an equation and graph on the grid above. Equation:_____ c) When is the Uber cheaper than the taxi?	There are two options for downloading movies from a website. Option A: $30 initial fee and then $2 per movie download Option B: Shown on the graph below Determine under which conditions a customer should choose Option A versus Option B.  	

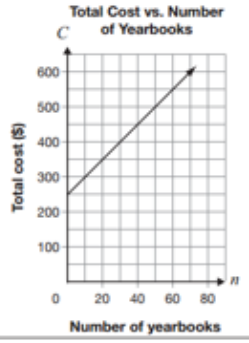
2. Last year's relationship between the total cost of producing yearbooks, C, and the number of yearbooks produced, n, is represented by the equation C=150+5n.
This year, the **initial cost is increased** but the **cost per yearbook is decreased.**

Which graph could represent this year's relationship between total cost and the number of yearbooks?

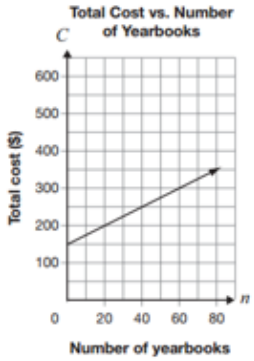
a



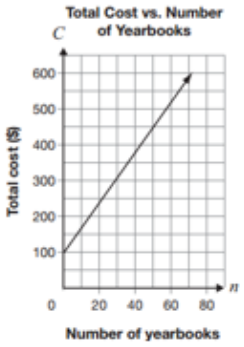
b



c



d



3. Consider the proportion $\frac{3}{4} = \frac{a}{24}$

What is the value of *a* in the proportion?

a 6 **b** 8 **c** 18 **d** 72

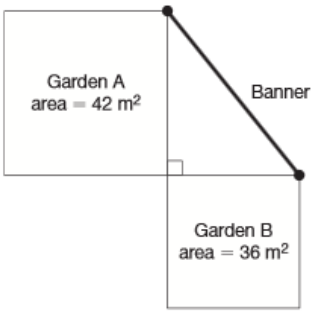
4. The air temperature of a mountain drops by $4\ ℃$ for every 1000 m of elevation.

If the air temperature is $25\ ℃$ at the base of the mountain, at what elevation will the air temperature be $17\ ℃$

a) 1000m b) 2000m c) 4000 m d) 8000 m

5. Two square gardens are shown below. A welcome banner extends from a corner of Garden A to a corner of Garden B.Which is closest to the length of the banner?

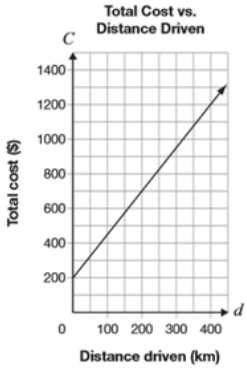
Which is closest to the length of the banner?



a 6 m **b** 9 m **c** 12 m **d** 78 m

6. A limousine company charges customers according to the graph below.

What rate does the company charge per kilometre?

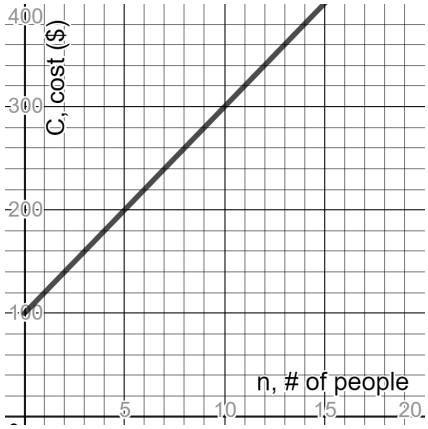


a $1.25 **b** $2.50 **c** $2.00 **d** $4.00

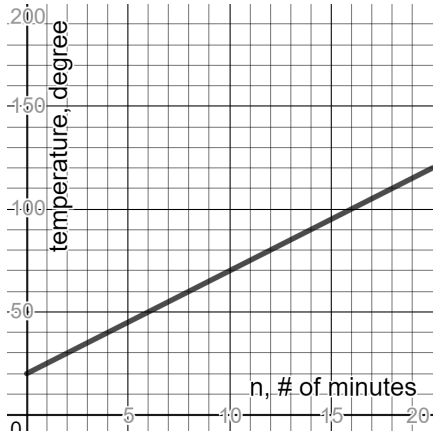
Solutions: 2 a 3 c 4 b 5 b 6 b

Check your Understanding

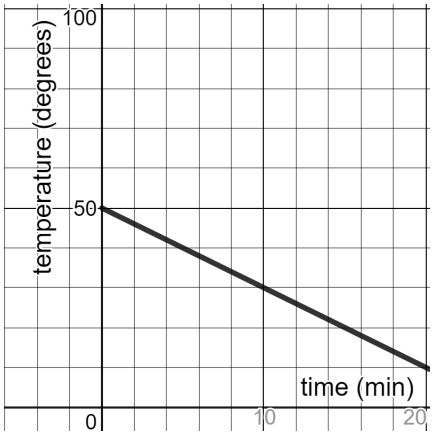
🔥1. State the equation of each graph.



Equation_____

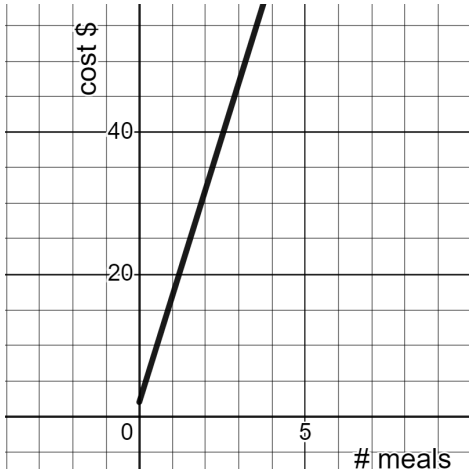


Equation_____



Equation_____

🔥🔥 2. Skip the dishes charges a service fee of $2 and then $15 per meal ordered.



Door dash charges a **higher service fee** but a
Create a POSSIBLE table of values, graph and equation for Door dash.

Table of Values

Equation

Graph

🔥🔥 3. A pizza place charges $3 per topping. The cost for a 6 topping pizza is $27.

a) Represent the relationship between the cost of the pizza and # of toppings by finding an equation.

b) <u>Use the equation</u> to find the # of toppings for a pizza that costs $24.

Solutions: 1. C=100+20n, T=20+5n, T=50-2n 2. Many solutions some are C=3+14n or C=4+10n or C=10+3n 3a) C=9+3n b) 5 toppings

🔥🔥 4. Tim is driving home from

a) Represent the relationship between his distance from

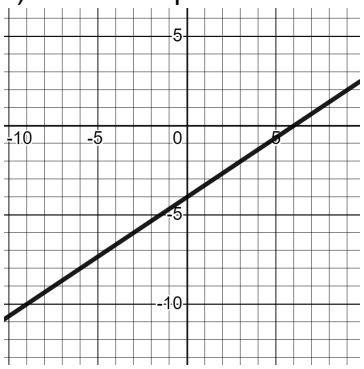
a trip at an average speed of 95 km/h (the whole way). After 3 hours of driving, he is 415 km from home.	home and hours driven by finding an equation. b) Use the equation to find the distance driven after 8 hours.
🔥🔥🔥 5. For 5 hours of work, Ahmed earns $72.50. For 12 hours of work, he earns $174.	a) Represent the relationship between P, his pay, and h, the number of hours in at least two different ways (including an equation). b) How much would Ahmed earn if he works 18 hours in a week?
🔥🔥🔥6. Hannah earns a base salary plus a percentage of her sales. Here are her earnings at different sales levels. Sales ($) / Total pay ($) 15 000 / 1700 17 500 / 1825 28 000 / 2350	How much would she get paid if she sells $47 000?

Solutions: 4a) D=130+95n b) 890 km 5a) P=14.50n b) $261 6. $3300 (equation P=950+0.05s)

Not used

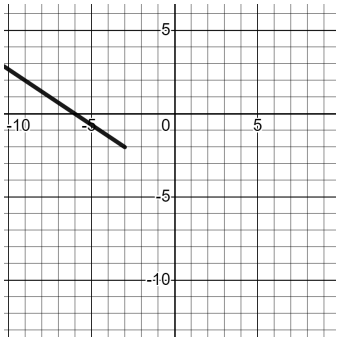
Check Your Understanding 6.10

a) Find the equation of the line.



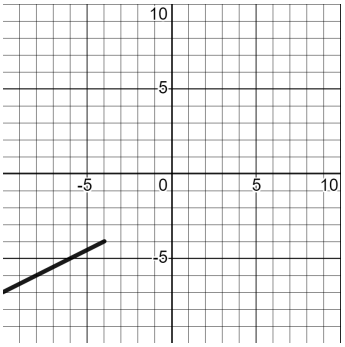
Equation:_____

b) Find the equation of the line if it was extended.



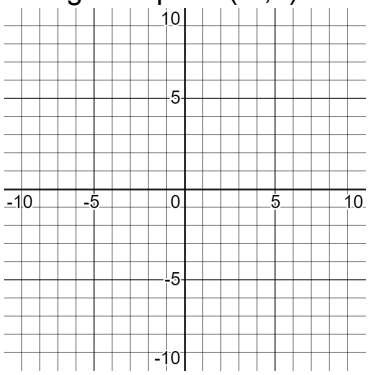
Equation:_____

c) Find the equation of the line if it was extended.

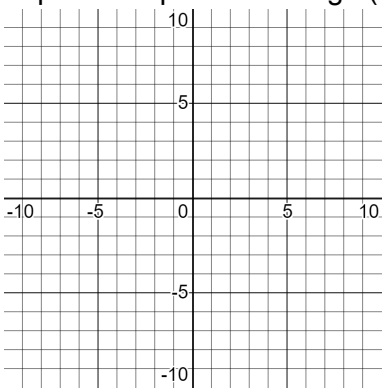


Equation:_____

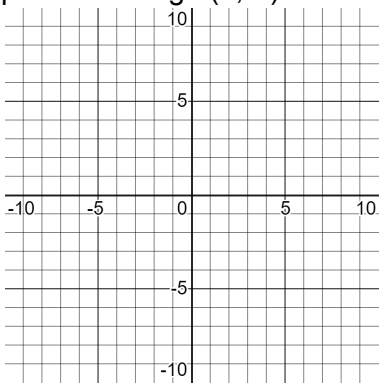
🔥🔥 d) Find the equation of a line with slope 1/2 and passes through the point (-4,3)



e) Find the equation of a line with slope 3 and passes through (2,5)



f) Find the equation of a line where the slope is undefined and passes through (3,-6)



🔥🔥 g) Find the equation of a line passing through the point (3,4) and slope is ⅔

x	y
3	4

h) Find the equation of a line passing through the point (3,4) and slope is -⅔

x	y
3	4

i) Find the equation of a line passing through the point (-2,1) and slope is -2

x	y
-2	1

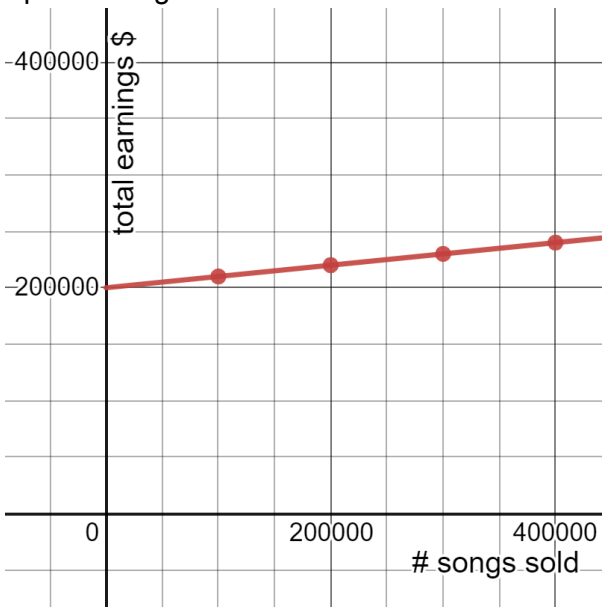
j) Find the equation of the line passing through the point (0,5) and parallel to y=7x+1

k) Find the equation of the line passing through the point (3,5) and parallel to y=3x+1

l) Find the equation of the line passing through the point (2,5) and is horizontal.

Solutions: a) y=⅔ x+4 b)y= ⅓ x-2 c) y= ½ x-2 d) y=½ x+5 e) y=3x-1 f) x=3 g) y= ⅔ x+2
h) y= ⅔ x+6 i) y=-2x-3 j) y=7x+5 j) y=3x-4 k) y=5

Option 1: Big Record label



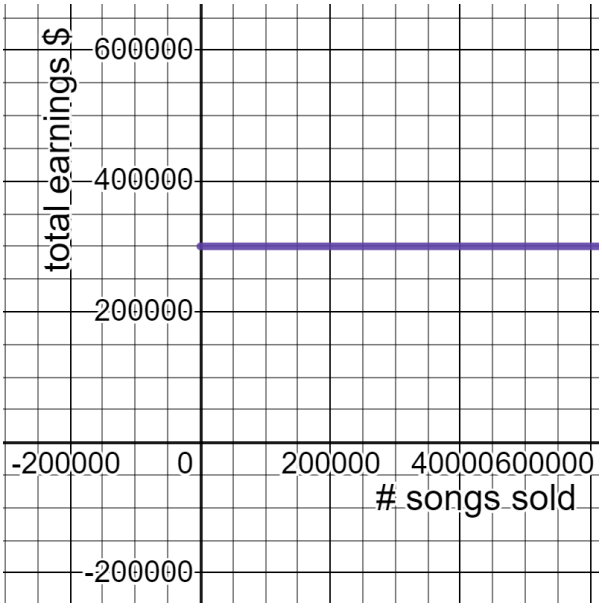
Option 2: Indie record label

Number of songs sold	Total earnings $
0	50000
10000	56000
20000	62000
30000	68000
40000	74000

Which would be the better option 1 or 2?

Option 3: Self Produce

It will cost you $20,000 for recording time and supplies, but once the record is made, the artist makes $0.80 per song sold.



Which would be the better option 1 or 2 or 3 or 4?

MTH1W Review

$$\frac{4}{7} = -\frac{8}{x}$$

1. What value of x makes this equation true?

a) 11 b) -11 c) 14 d) -14

2. A study is being done to compare the amount of rainfall per month for two towns.
Which of these types of graphs would **best** display this data so that the amount of rainfall could be compared for several months?

a) Boxplot b) histogram c) circle graph d) double bar graph

3. A landscaper uses boot length to estimate distances.
The length of the boot is about 32 cm long.
If the landscaper makes a garden that has a width of 3.5 m, approximately how many boot lengths is the width of the garden?

a) 1 boot length b) 9 boots lengths c) 11 boot lengths d) 36 boot lengths

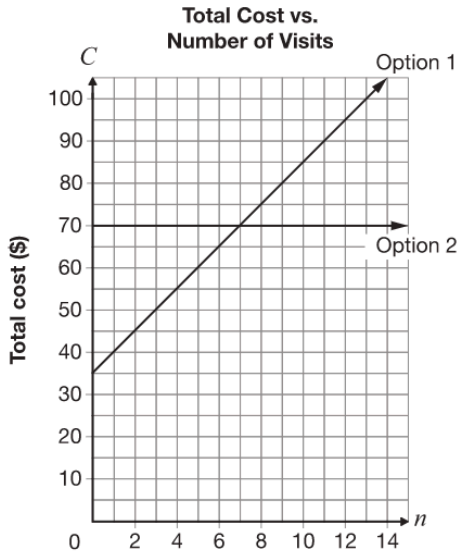
4. Select the **two** expenses that would be priorities for a household budget for most families.

a) cost of housing
b) cost of food
c) cost of a movie streaming subscription
d) cost of purchasing a video game

5. In a park, there are n benches.
A maximum of 2 people can sit on each bench.
At this time, the maximum number of people are sitting on each bench and 8 people are walking in the park.
Which expression represents the total number of people in the park at this time?

a) 2n b) 2n-8 c) 2n+8 d) 8n+2

6. A provincial park offers two options for entrance fees, as shown on this graph.
Which statement about the options is true?



a) For 4 visits, Option 2 is $\$15$ cheaper.
b) For fewer than 8 visits, Option 2 is cheaper.
c) For 11 visits, Option 1 is $\$10$ more expensive.
d) For more than 7 visits, Option 1 is more expensive.

7. The heights of 10 small trees, in centimetres, are shown.
135 139 140 141 142
146 152 155 158 159
A box plot is constructed for this data. In which quarter of the box plot is the value 142?
The value 142 is located in the _____ quarter of the box plot.

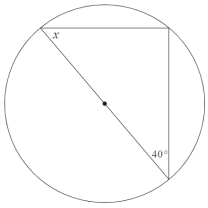
a) first b) second c) third d) fourth

8. **Drag and drop** each of these examples of financial situations involving appreciation and depreciation into the correct box.

a) The price of a house doubles over time
b) The decrease in the value of a car over time
c) The value of a computer over time

Financial situation involving appreciation	Financial situation involving depreciation

9. What is the value of x.



a) 40^0 b) 50^0 c) 140^0 d) 150^0

10. A cylinder has a diameter of 20 cm and a height of 60 cm.
Which expression represents the volume of a cone with the same dimensions?

$\frac{1}{3}\pi(10)^2(60)$	$\frac{1}{3}\pi(20)^2(60)$
$3\pi(10)^2(60)$	$3\pi(20)^2(60)$

11. Nya plans these steps before coding in a program.

- Assign a value to x.
- If x is an integer, display x.
- Or else, determine the integer n such that $x - 1 < n < x$.
- Display n.

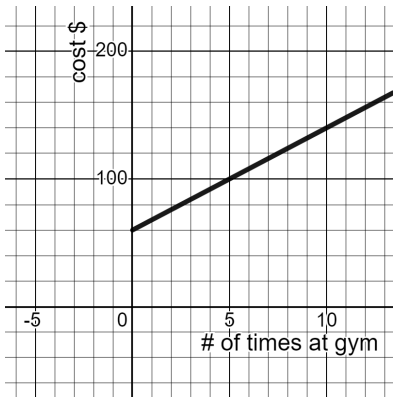
She assigns π to the value of x.

What should be displayed as output based on her steps?

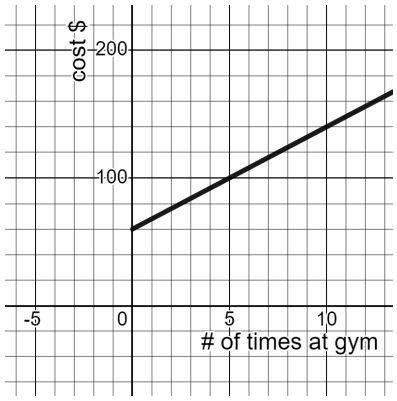
$n = 3$	$n = 4$
$n = \pi$	$n = 2.14$

Solutions: 1 d 2 d 3 c 4 ab 5 c 6 d 7 b 8 (a) appreciation b and c depreciation 9 b 10 top left 11 bottom right

Entry Name:_____

Given:  Find the equation of the gym above where C is the cost in $ and n is the number of times the person went to the gym.	Another gym costs C=40+12n where C is the cost in $ and n is the number of times the person went to the gym. Find when the gyms cost the same using any method. Explain when one gym would be less expensive than the other one.

Entry Name:_____

Given:  Find the equation of the gym above where C is the cost in $ and n is the number of times the person went to the gym.	Another gym costs C=40+12n where C is the cost in $ and n is the number of times the person went to the gym. Find when the gyms cost the same using any method. Explain when one gym would be less expensive than the other one.

MTH1W Name: _____

🔥	🔥🔥	🔥🔥🔥
Expand and simplify the following where possible.		
a) $x^2 + 3x + x^2 - 5x - 1$	c) $4x(2x-1) - 3x(x-2)$	e) $3x(x^2 - x + 4) - (2x-5) + 3x$
b) $2(3x-1) - 5(x+2)$	d) $x^2 + y^2 + xy + yx$	

🔥	🔥🔥	🔥🔥🔥
Can you work backwards? Given the answer can you come up with the question? There **may** be more than one answer.		
solution:( )( )=$2x + 6$	solution:( )( )=$6x - 9$	solution:( )( )=$10x + 5$
solution:( )( )=$x^2 + 2x$	solution:( )( )=$8x - 6$	solution:( )( )=$2x^2 + 6x$
Solutions: ( ) ( )=$15x^2-20x$	Solutions: ( ) ( )=$15x^2-20x+10$	Solutions: ( ) ( )=x^3-10x^2+20x

Solutions: ( ) ( )=12x	Solutions: ( ) ( )=x^3-10x^2+20x	Solutions: ( ) ( )=x^3-10x^2+20x

🔥	🔥🔥	🔥🔥🔥
1. Write as a single power with positive exponent.	1. Write as a single power with positive exponent.	1. Write as a single power with positive exponent.
a) $(5^2)(5^4)$	a) $(3^{-1})(3^5)$	a) $\left(\frac{1}{3}\right)^{-4}$
b) $(5^4)^2$	b) $(3^2)(3^{-6})$	b) $-999^8 \times 999^{-8}$
c) $(3^3)(3^5)(3^2)$	c) $(3^{-2})^{-5}$	c) $\frac{2^{-2}}{2^4}$
d) $\frac{8^6}{8^4}$	d) $(3^{-2})^5$	d) $\frac{2^4}{2^{-2}}$
e) $\frac{(3^7)(3^5)}{(3^2)(3^4)}$	e) $\frac{3^{-2}}{3^{-5}}$	e) $(x^{-1}y^2)(x^5y^{-7})$
f) $\frac{(3^4)^2}{(3^2)^3}$	f) $\frac{3^{-5}}{3^{-2}}$	f) $(x^{-1}y^2)^{-3}$
g) 4^{-1}	g) $\frac{(4^3)(2^9)}{(4^7)(2^6)}$	g) $(5x^2y^{-4})^2$
h) 4^{-2}	h) $\frac{(4^{-3})(2^9)}{(4^7)(2^{-6})}$	h) $(5x^2y^{-4})^{-2}$
i) 5^0	i) $\frac{(4^{-3})(2^{-9})}{(4^{-7})(2^{-6})}$	i) $(5x^2y^4)^{-2}$
j) 100^0	j) $\frac{7^{-2}}{7^{-2}}$	$(x^{-3})(x^7)(x^{-2})(x)(x^4)(x^{-7})$

k) $(-2)^0$	k) $(-8)^0$	k) $\dfrac{(4x^5y)^2(x^{-3}y^{-2})}{(x^7y^{-5})}$

Solutions

🔥 a) 5^6 b) 5^8 c) 3^{10} d) 8^2 e) 3^6 f) 3^2 g) ¼ h) 1/16 i) 1 j) 1 k) 1

🔥🔥 a) 3^4 b) $1/3^4$ c) 3^{10} d) $1/3^{10}$ e) 3^3 f) $1/3^3$ g) $2^3/4^4$ h) $2^{15}/4^{10}$ i) $4^4/2^3$ j) 1 k) 1

🔥🔥🔥 a) 3^4 b) 1 c) $1/2^6$ d) 2^6 e) x^4/y^5 f) x^3/y^6 g) $25x^4/y^8$ h) $y^8/25x^4$ i) $1/25x^4y^8$ j) 1 k) $16y^5$