

1. Jackie buys a new car for \$35000. The car decreases in value by 10% per year.

a) What is the car worth at the end of 3 years?

Jackie sells the car after 3 years and pays 1.5% commission to a garage for selling it for her. She puts the money into a bank account which pays her 6% interest per annum.

b) How much money did Jackie receive for the sale of the car?

c) Calculate how much money Jackie had at the end of 5 years after selling her car.

Answers:

a)

b)

c)

2. Let $x = 5.2 \times 10^3$ and $y = 2.9 \times 10^{-5}$.

Find

a) $\frac{y}{x}$

b) $3x - 2y$

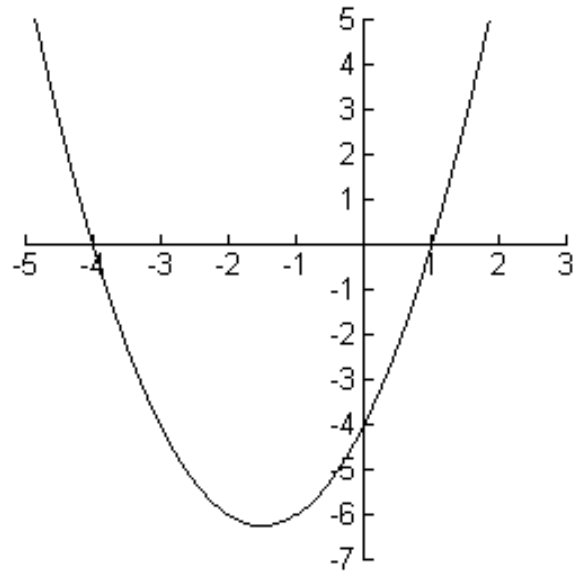
give your answers in the form $a \times 10^k$, where $1 \leq a \leq 10$ and $k \in \mathfrak{R}$.

Answers:

a)

b)

3. The graph below shows a quadratic function $f(x) = x^2 + bx + c$



- a) Find the value of c .
- b) Factorise the equation.
- c) Find the value of b .

Answers:

a)

b)

c)

4. An electrician works on call out jobs at people's houses. He has developed a formula for his hourly charge as follows:

$$\$C = 15h + 30, \quad \text{where } C \text{ is the charge and } h \text{ are the hours worked.}$$

- Calculate the cost for 4 hours work.
- Calculate the number of hours worked if the charge was \$52.50.
- The equation is made up of an hourly fee and a call out charge. Find the call out charge.

Answers:

a)

b)

c)

5. Alan plays for Newcastle United football team.
 p represents Alan scoring a goal and q is Newcastle United winning.

- Complete the following truth table.
- Describe in words what the final column $\neg p \Rightarrow \neg q$ stands for.

Answers:

(a)

p	q	$\neg p$	$\neg q$	$\neg p \Rightarrow \neg q$
T	T			
T	F			
F	T			
F	F			

b)

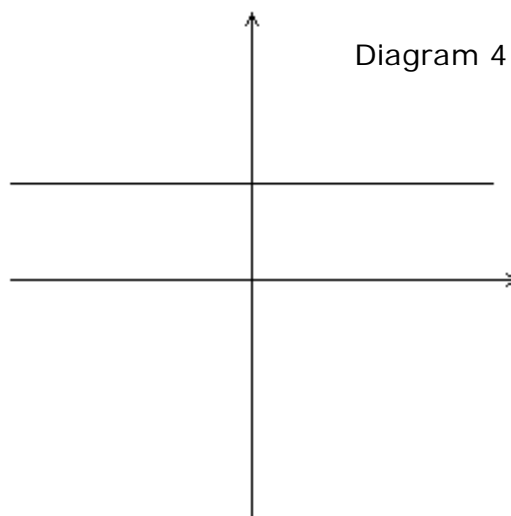
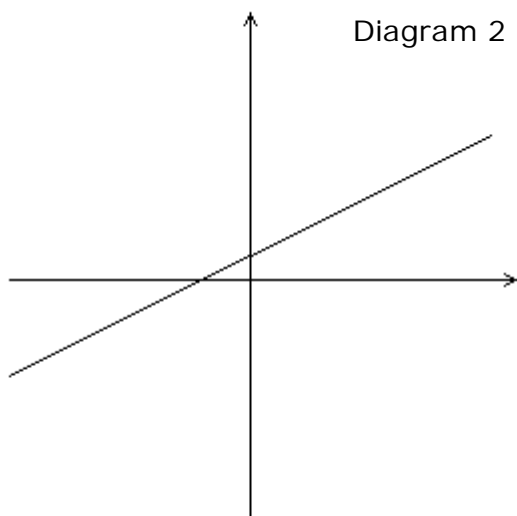
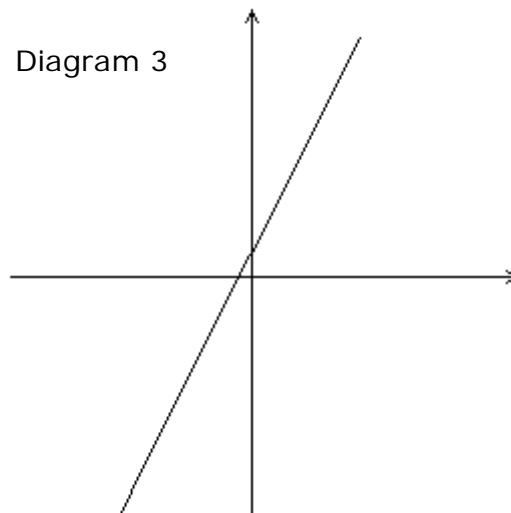
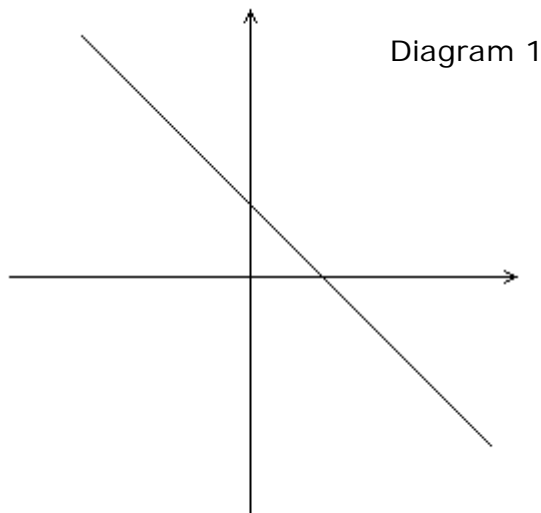
6. An architect measures the angle of elevation of building. He is 60 metres, correct to the nearest 10 metres, from the building. The angle of elevation is 18° , correct to the nearest degree.

Calculate the least height of the building.

Answer:

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7. Each diagram below matches to a straight line equation in the table. All the lines are drawn to the same scale. Write the correct diagram numbers next to the equation in the table.



Equation	Diagram
$y = 2x + 1$	
$y = 3 - x$	
$y = c$	
$y = \frac{1}{2}x + 1$	

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1. a) \$25515

b) \$25132

c) \$33633

2. a) 5.58×10^{-9}

b) 1.56×10^4

3. a) $c = -4$

b) $(x - 1)(x - 4)$

c) 3

4. a) \$90

b) $1\frac{1}{2}$

c) \$30

5. a)

p	q	$\neg p$	$\neg q$	$\neg p \Rightarrow \neg q$
T	T	F	F	T
T	F	F	T	T
F	T	T	F	F
F	F	T	T	T

b) If Alan does not score then Newcastle will not win.

6. 17.34

7.

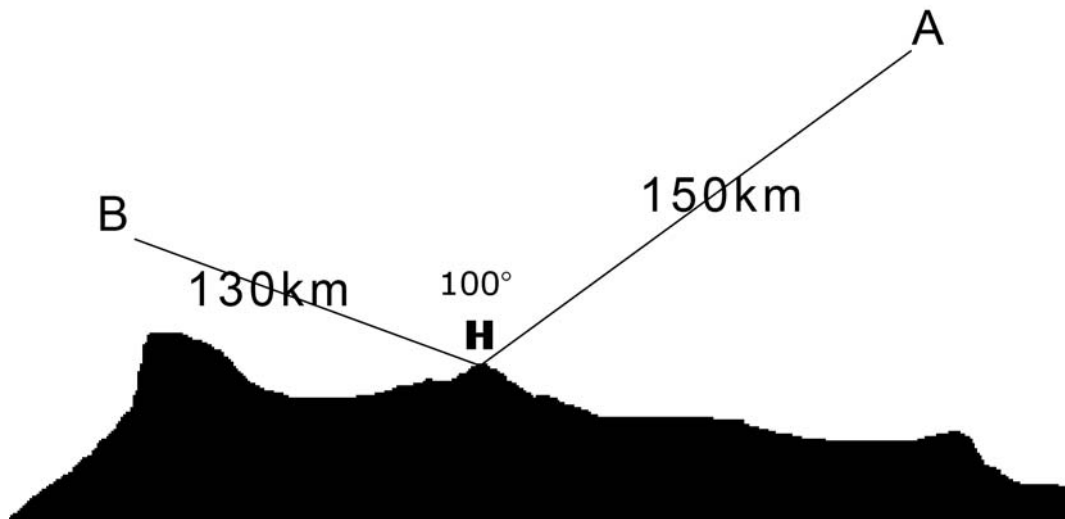
Equation	Diagram
$y = 2x + 1$	3

$y = 3 - x$	1
$y = c$	4
$y = \frac{1}{2}x + 1$	2

8. a) $f'(x) = 6x^2 + 2x - 4$

b) $(-1, 4)$

9. a)



b) 214.9 km

c) 9602 km^2

10. a) 0 to 720

b) -7 to 1

c) 3

11. a) 7.21

b) $(5, 7)$

c) $-\frac{2}{3}$

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12. a) \$4095

b) 10th month.

13. a) \$595

b) \$52.70

14. a) 120

b) 3 hours 28 minutes

15. A number of solutions can be found. All must add to 112.

Possible solution is 9,12,12,13,20,22,24.