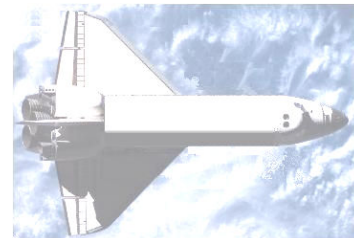
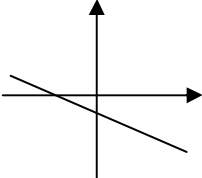


Grade 10 Diagnostic Test Answers



Section 1

Numbers, Operations, Relationships,
Patterns, Functions and Algebra

- 1 Simplify $(a + 3b) - (-a - 3b - c)$
C $2a + 6b + c$. Be careful to change all the signs in the second expression to obtain $a + 3b + a + 3b + c$
-
- 2 What must be added to $2x^2 - 4x + 1$ to obtain $x^2 - 4$?
A $-x^2 + 4x - 5$ We must write $x^2 - 4 - (2x^2 - 4x + 1)$ and solve this expression.
Think of the question. What must be added to 3 to obtain 7.
We would write $7 - 3 = 4$
-
- 3 You pay € 16.52 for a dinner in Paris. The rate of exchange is: 0.0988 Euros to the Rand.
How much did your meal cost in Rands?
D R167.21 If R1 = € 0.0988 then R10.1214 = € 1. Now multiply both sides by 16.52
-
- 4 Solve for x : $2(x - 3) - (6x - 9) = 0$
D $x = \frac{3}{4}$ Multiply out correctly and simplify. Then transform the equation to get x 's on the LHS and constants on the RHS
-
- 5 Solve for x : $\frac{2x + 3}{5} - \frac{4 - x}{4} = \frac{2x - 1}{6} - 1\frac{1}{2}$
A $x = -4$ The LCD is 60. Multiply each term by 60. You should get: $24x + 36 - 60 + 15x = 20x - 10 - 90$
This is now similar to question 4.
-
- 6 Which of the following expressions will always be a natural number if a and b are natural numbers?
B $a + b$ Natural numbers are $\{1, 2, 3, \dots\}$ If you add two natural numbers the result is a natural.
-
- 7 How many seconds are there in one week?
D $6.048 \times 10^5 \text{ sec}$ 7 days \times 24 hours \times 60 minutes \times 60 seconds = 604800 seconds. Standard form for scientific notation means number is written with a non-zero digit, decimal point or comma then remaining digits multiplied by a power of 10
-
- 8 Find the amount if a total of R50000 is invested for 4 years at 9.2% compound interest p.a. and the interest is compounded semi-annually.
C R71651.20 Use the formula: $A = P(1 + i)^n$. $i = 0.092/2 = 0.046$ (semi-annually) and $n = 8$.
-
- 9 Factorise completely: $1 - 16x^4$
D $(1 - 2x)(1 + 2x)(1 + 4x^2)$ Note that in this question, completely means if you can factorise again, you must. Don't leave your answer as $(1 - 4x^2)(1 + 4x^2)$
-
- 10 Which of the following graphs best represents the function: $y = -\frac{1}{2}x - 1$?
C  The function has a negative gradient of $-\frac{1}{2}$ and the y-intercept is -1.
A negative gradient or slope means the line is inclined down from left to right.

Section 2

Space, Shape, Measuring, Data Handling

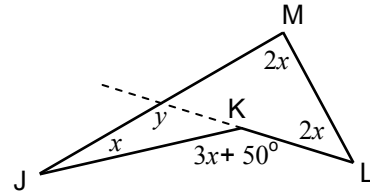
- 11 The angles in a triangle are in the ratio 4:11:3. What is the size of the largest angle?

B 110° The sum of the parts in the ratio is 18: The largest angle is $\frac{11}{18} \times 180^\circ = 110^\circ$

- 12 Find the value of x :

A 25°

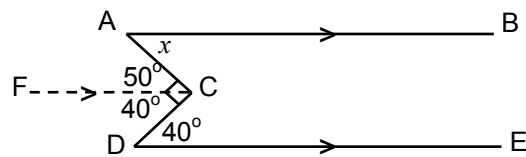
Extend LK. $y = 4x$. But $y + x = 3x + 50^\circ$
i.e. $4x + x = 3x + 50^\circ$



- 13 Find the value of x in the diagram. (Hint, draw another parallel line in the figure).

C 50°

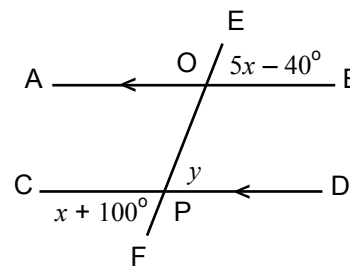
If $FC \parallel AB \parallel DE$ then
 $\angle FCD = 40^\circ$ and $\angle FCA = 50^\circ$
Both are alternate with respect to $\angle A$ and $\angle D$



- 14 Calculate the value of x :

D 35°

Let $\angle OPD = y$
 $y = 5x - 40^\circ$ (Corresponding angles, $AB \parallel CD$)
 $y = x + 100^\circ$ (Vertically opposite \angle 's)
 $\therefore 5x - 40^\circ = x + 100^\circ$

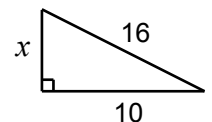


- 15 What type of quadrilateral is symmetrical about only one diagonal?

C kite The rhombus and square are symmetrical about both diagonals.

- 16 Calculate the length of x . Leave your answer in surd form.

C $2\sqrt{39}$ units. By Pythagoras' Theorem, $x^2 = 16^2 - 10^2 \therefore x^2 = 156$ and $x = \sqrt{156}$



- 17 What type of triangle is $\triangle PQR$ if $p = 2.5\text{m}$, $q = 6\text{m}$ and $r = 6.5\text{m}$?

A right angled. This is because $r^2 = p^2 + q^2$.

- 18 A cylinder has a height of 3m and a radius of 1200mm. Find the total surface area in terms of π . (Both ends are closed)

A $10\frac{2}{25}\pi \text{ m}^2$. Work in metres. Area = 2Top + side. i.e. $2\pi(1.2)^2 + 2\pi(1.2) \times 3$

- 19 What is the probability that the letter will be a B?

B $\frac{2}{11}$ There are two B's and eleven letters altogether. Probability = $\frac{\text{Favorable outcomes}}{\text{Possible outcomes}}$

- 20 You roll two dice. What is the probability of scoring a double? For example, two one's or two 2's etc.

C $\frac{1}{6}$ There are 36 ways to throw two dice (assume different colours).

Since Probability = $\frac{\text{Favorable outcomes}}{\text{Possible outcomes}}$, we have $\frac{6}{36} = \frac{1}{6}$ favorable outcomes compared to possible outcomes.