

## SOUTHERN PROVINCIAL DEPARTMENT OF EDUCATION

## MID YEAR TEST - 2019

## GRADE 8

## MATHEMATICS

Name/ Index No :- .....

Time : 2 Hours

## Part I

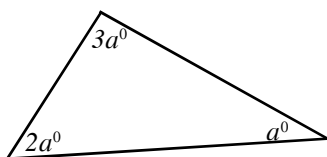
- Answer all the questions.

(1)  $12 : \square = 36 : 15$  Fill in the blank.

(2) If  $28 \times 43 = 1204$  Write down the value of  $0.028 \times 43$ .

(3) Simplify  $\frac{4}{9} \times 2\frac{1}{4}$ .

(4)

Find the value of  $a^0$ .

(5) Solve  $\frac{n}{4} - 1 = 3$  .

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(6) Write  $6\frac{33}{40}$  as a decimal.

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(7) Find the value of  $62.32 \times 3.48$  .

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(8) Order of rotational symmetry of a regular octagon is ..... (Fill in the blank.)

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(9) Find the value  $2^2 \times 5^2 \times 3^2$  .

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(10) Find the value of  $\sqrt{900}$  .

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(11) How many 2.4 m length pieces can be cut using a 72 m pipe.

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(12) The ratio among the heights of Saman, Suresh and Caseem is 5 : 4 : 6 respectively. If the height of Suresh is 96 cm, find the height of Caseem.

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(13) Fill in the blanks.

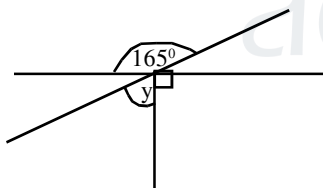
$$12480 \text{ kg} = \dots\dots\dots \text{ t}$$

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(14)  $6a^2 - 15ab + 18abc$ , Find the factors.

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(15)



Find the value of  $y^\circ$ .

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(16) Find the H. C. F of  $4x^2y$ ,  $12xy$ ,  $8xy^2$ .

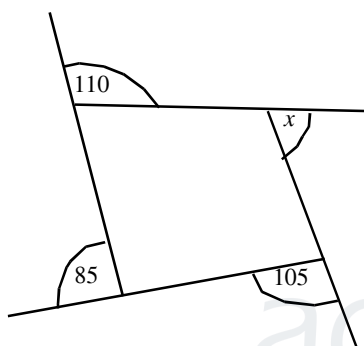
- (17) Number of edges and faces of a solid are 10 and 6 respectively. Find the number of vertices.

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- (18) Find the value  $\frac{(-36)}{(-6) \times (-2)}$  .

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(19)



Find the value of  $x^\circ$ .

agaram.lk

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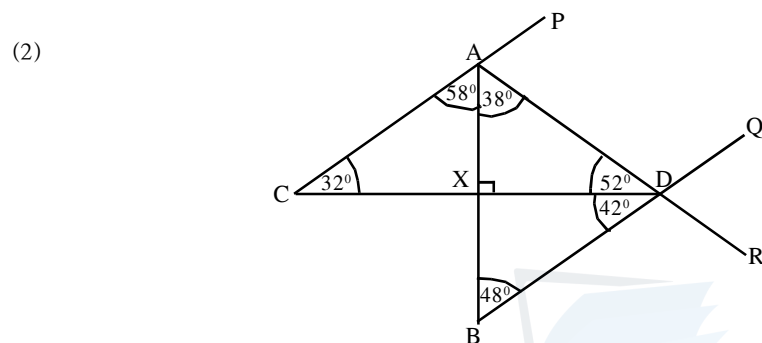
- (20) General term of a number pattern is  $2n - 1$ . Find 125<sup>th</sup> term of that number pattern,

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## Part II

Write down the answers for only five questions

- (1) General term of a number pattern which is written in ascending order is  $\frac{n(n+1)}{2}$ .
- Write the first term of this number pattern.
  - Write the 9<sup>th</sup> and 10<sup>th</sup> terms of this number pattern.
  - If  $19 \times 20 = 380$  then find which term is 190 of this number pattern.
  - If  $20 \times 21 = 420$  then find which term is 210 of this number pattern.
  - Show that the sum of the 19<sup>th</sup> and 20<sup>th</sup> terms of this number pattern is equal to the 20<sup>th</sup> term of square number pattern which is written in ascending order starting from 1.



AB and CD straight lines are intersect at the point X perpendicularly (with  $90^\circ$ ) CP, AR, and BQ are straight lines.

- Write down 2 pairs of complementary angles.
  - Write down 2 pairs of supplementary angles.
  - Write down 2 pairs of vertically opposite angles.
  - Find the value of  $\hat{QDR}$ .
  - Find the value of  $\hat{BDR}$ .
  - What can you say about to angles  $\hat{ADQ}$  and  $\hat{BDR}$ . Give reasons.
- (3)
- Write down  $25n^2$  as a product of powers.
  - Write down  $(10xy)^2$  as a power of a product and simplify.
  - Simplify  $(5a)^3 \times (2a)^3$ .
  - Show that  $8 \times 27$  is equal to  $6^3$ .
  - Show that the value of  $(-2)^6$  and  $4^3$  are equal to each other.
  - Without taking the answer of  $(-5)^5 \times (-37)^4$  by giving reasons state the answer is positive or negative.

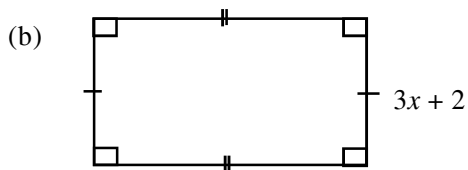
- (4) (a)

Do not enter  
vehicles which are  
greater than 10t.



This poster is in front of a damaged bridge. Mass of a container is 7.2t. There are 80 cement bags each 50 kg in that container. That container is waiting to cross the bridge.

- Show that this container can't cross the bridge with suitable calculations.
- Find the minimum number of cement bags which must remove from this container to cross the bridge.



Perimeter of a rectangle is  $16x + 10$  units. If the breadth of that rectangle is  $3x + 2$  units. Write down an algebraic expression for the length of the rectangle.

(5) (a)

28.2 cm



15.3 cm

A gold colour thread is pasted around this rectangular wall hanger.

- (i) Find the total length of that thread.
- (ii) Find the length of thread which is needed to paste around 18 such wall hangers in metres.
- (iii) If the price of one meter of thread is Rs. 20.50 find the cost which is needed for 18 wall hangers.

(b) When 5 is added to four times the number "x" the answer is 61.

- (i) Build up an equation using the given information.
- (ii) Solve that equation.

(6) Dilini start a business on 1<sup>st</sup> of January by investing Rs. 50 000. Fathima joined the business on 1<sup>st</sup> of March by investing Rs. 80 000. Ganeesha joined the business on 1<sup>st</sup> of June by investing Rs. 100 000.

- (i) Find the ratio of money they invested in the simplest form.
- (ii) Find the ratio of the time period they invested money in the business.
- (iii) Find the ratio which they use to divide the profit they received from the business at the end of a year.
- (iv) If the profit they received from the business is Rs. 210 000. Find separately the profit each received.

(7) (a) Fill in the blanks.

(i)  $\frac{1}{2} = \square \%$

(ii)  $0.7 = \square \%$

(iii)  $2.4 = \square \%$

(iv)  $25\% = \square$

(v)  $600\% = \square$

(vi)  $2 : 3 = 100 : \square$

(b) If 30% of a person's salary is Rs. 7800 find the monthly salary of that person.

(c) In a class there are 40 students. 24 of them are girls. Find the percentage of boys in the class.

## SOUTHERN PROVINCIAL DEPARTMENT OF EDUCATION

## MID YEAR TEST - 2019

Grade 8  
MATHEMATICS - ANSWER GUIDE

## Part I

- (1)  $\frac{15}{3}$  ..... 1  
5 ..... 2
- (2) 1.204 ..... 2
- (3)  $\frac{4}{9} \times \frac{9}{4}$  ..... 1  
1 ..... 2
- (4)  $a+2a+3a = 180^0$  ..... 2  
or  
 $6a = 180$  ..... 1  
 $a = 30$  ..... 2
- (5)  $\frac{n}{4} - 1 + 1 = 3 + 1$  or  
 $\frac{n}{4} = 4$  ..... 1  
 $n = 16$  ..... 2
- (6)  $6. \frac{33}{40} \times \frac{2.5}{2.5}$  or  $\frac{25}{25}$  ..... 1  
6.825 ..... 2
- (7)  $62.32 \times 3.48$   
2168736 ..... 1  
216.8736 ..... 2
- (8)  $2^2 \times 5^2 \times 3^2$   
 $4 \times 25 \times 9$  ..... 1  
900 ..... 2
- (10)  $\sqrt{900}$   
 $\sqrt{30^2}$  ..... 1  
or  
 $\sqrt{2^2 \times 3^2 \times 5^2}$  ..... 1  
 $2 \times 3 \times 5$  ..... 1-2  
30
- (11)  $\frac{720}{24}$  ..... 1  
30 ..... 2
- (12)  $\frac{4}{15} \rightarrow 96cm$  ..... 1  
 $\frac{1}{15} \rightarrow 24cm$  ..... 1  
 $24 \times 6$  ..... 1  
144cm ..... 2
- (13) 12.48t ..... 2
- (14)  $6a^2 - 15ab + 18abc$   
 $3a(2a - 5b + 6bc)$  ..... 2
- (15)  $y + 90 = 165^0$  ..... 1  
 $y = 165 - 90$  ..... 1  
 $y = 75^0$  ..... 2
- (16)  $4x^2y, 12xy, 8xy^2$   
H.C.F. =  $4xy$  ..... 2
- (17)  $F + V = E + 2$  ..... 1  
Vertices + 12 - 6 = 6 ..... 2
- (18)  $\frac{(-36)}{(-6) \times (-2)}$   
3 ..... 1  
(-3) ..... 2
- (19)  $110 + 105 + 85 + x = 360$  ..... 1  
 $x = 360 - 300$  ..... 1  
 $x = 60$  ..... 2
- (20)  $2n - 1$   
 $2 \times 125 - 1$  ..... 1  
249 ..... 02

## Part II

<p>(1) (i) <math>\frac{1 \times (1+1)}{2}</math> ..... 1 1 ..... 1-2</p> <p>(ii) <math>\frac{9 \times 10}{2}</math> ..... 1 = 45 ..... 2 <math>\frac{10 \times 11}{2}</math> ..... 1 = 55 ..... 2</p> <p>(iii) <math>\frac{19 \times 20}{2} = \frac{380}{2}</math> ..... 1 19<sup>th</sup> term = 190 ..... 2</p> <p>(iv) <math>\frac{20 \times 21}{2} = \frac{420}{2}</math> ..... 1 20<sup>th</sup> term = 210 ..... 2</p> <p>(v) 190 + 210 = 400 400 = 20 × 20 = 20<sup>2</sup> ..... 1 20<sup>th</sup> square number is 400. .... 2 ..... <b>12</b></p>	<p>(3) (i) <math>25n^2 = (5n)^2</math> ..... 1</p> <p>(ii) <math>(10xy)^2 = 100x^2y^2</math> ..... 1</p> <p>(iii) <math>(5a)^3 \times (2a)^3</math> ..... 1 <math>125a^3 \times 8a^3</math> ..... 1 <math>1000a^6</math> ..... 1-3</p> <p>(iv) <math>8 \times 27 = 2^3 \times 3^3</math> ..... 1 <math>= (2 \times 3)^2</math> <math>= 6^3</math> ..... 1-2</p> <p>(v) <math>(-2)^6 = (-2)^3 \times (-2)^3</math> ..... 1 <math>= (-2 \times -2)^3</math> <math>= 4^3</math> ..... 1-2</p> <p>(vi) Sign of <math>(-5)^5</math> is negative ..... 1 <math>(-37)^4</math> is positive ..... 1 When a negative and a positive values are multiply the answer is negative ..... 1 ..... 3 ..... <b>12</b></p>
<p>(2) (i) Any 2 pairs of complementary angles. (One mark for each) ..... 2</p> <p>(ii) Any 2 pairs of supplementary angles. (One mark for each) ..... 2</p> <p>(iii) Any 2 pairs of vertically opposite angles. ..... 2</p> <p>(iv) <math>\hat{QDR} = \hat{ADB}</math> (vertically opposite) 1 <math>= 52^\circ + 42^\circ</math> <math>= 94^\circ</math> ..... 2</p> <p>(v) <math>\hat{BDR} = 180 - \hat{QDR}</math> ..... 1 <math>= 180 - 94</math> <math>= 86</math> ..... 2 (Or any other method) ..... 2 <math>\hat{ADQ} = \hat{BDR}</math> ..... 1 vertically opposite angle (For reason) -- 2 ..... <b>12</b></p>	<p>(4) (a) (i) <math>7.2t + 50 \times 80\text{kg}</math> ..... 1 <math>7.2t + 4000\text{kg}</math> ..... 1 <math>7.2t + 4t</math> ..... 1 11.2t <math>11.2t &gt; 10t</math> ..... 1 Container can't travel ..... 1-5</p> <p>(ii) Extra mass 1.2t ..... 1 1200kg ..... 1 Cement bags <math>\frac{1200}{50} = 24</math> ..... 1 Must remove 24 cement bags. ..... 1-4</p> <p>b) (Length + Breadth) × 2 = Perimeter - 1 <math>2 \times \text{Length} + 2(3x + 2) = 16x + 10</math> --- 1 <math>2 \times \text{Length} = 16x + 10 - 6x - 4</math> <math>= 10x + 6</math> ..... 1 Length = <math>5x + 3</math> ..... 1-3 ..... <b>12</b></p>



- (5) (a) (i)  $2(28.2+15.3)$  ----- 1  
 $2 \times 43.5$   
 87cm ----- 1-2
- (ii)  $87\text{cm} \times 18$  ----- 1  
 1566cm ----- 1  
 15.66m or 16m ----- 1-3
- (iii) Rs.  $20.50 \times 16$  ----- 1  
 Rs. 328 ----- 1  
 or  
 Rs.  $20.50 \times 15.66$  ----- 1  
 Rs. 321.03 ----- 1-2
- b)  $4x + 5 = 61$  ----- 2  
 $4x + 5 - 5 = 61 - 5$  ----- 1  
 $4x = 56$  ----- 1
- $$\frac{4x}{4} = \frac{56}{4}$$
- $x = 14$  ----- 1-5  
 ----- 12

- (6) (i) 50000 : 80000 : 100000 ----- 1  
 5 : 8 : 10 ----- 1-2
- (ii) 12 : 10 : 7 ----- 1
- (iii)  $5 \times 12 : 8 \times 10 : 10 \times 7$  ----- 1  
 60 : 80 : 70 ----- 1-2  
 6 : 8 : 7
- (iv) Dilini : Fathima : Ganesha  
 6 : 8 : 7
- (iv) Profit as a fraction.
- $$\frac{6}{21} : \frac{8}{20} : \frac{7}{20} \text{ ----- 1}$$
- Dilini's profit = Rs.  $210000 \times \frac{6}{21}$  ----- 1  
 = Rs. 60000 ----- 1
- Fathima's profit = Rs.  $210000 \times \frac{8}{21}$  ----- 1  
 = Rs. 80000 ----- 1
- Ganesha's profit = Rs.  $210000 \times \frac{7}{21}$  ----- 1  
 = Rs. 70000 ----- 1-7  
 ----- 12

- (7) (a) (i) 50% ----- 1
- (ii) 70% ----- 1
- (iii) 240% ----- 1
- (iv)  $\frac{1}{4}$  ----- 1
- (v) 6 ----- 1
- (vi) 150 ----- 1-6
- (b) 30%  $\rightarrow$  Rs. 7800 ----- 1
- $$\text{Salary} = \frac{7800}{30} \times 100 \text{ ----- 1}$$
- $$= \text{Rs. } 26000 \text{ ----- 1-3}$$
- (c) No. of boys =  $40 - 24 = 16$  ----- 1
- $$\frac{16}{40} \times 100\% \text{ ----- 1}$$
- 40% ----- 1-3  
 ----- 12



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