

# TOPIC 1

## NAPLAN practice

### 1.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at [www.jacplus.com.au](http://www.jacplus.com.au). They will help you to learn the concepts covered in this topic.



#### 1.1.1 Why learn this? **assessment**

All students in Australia are required to sit NAPLAN tests in May of Years 3, 5, 7 and 9.

NAPLAN is an acronym for National Assessment Program — Literacy and Numeracy.

There are two Numeracy tests — one in which students may use a calculator and one in which they may not. Both tests contain 32 questions, most of which are multiple choice. Each test lasts for 40 minutes.

In the exercises, there are NAPLAN practice tests to help you prepare for when you have to sit the actual tests. It is best to complete one practice test per week before you undertake the formal tests.

#### LEARNING SEQUENCE

- 1.1 Overview
- 1.2 NAPLAN practice 1
- 1.3 NAPLAN practice 2
- 1.4 NAPLAN practice 3
- 1.5 Review

#### learnON RESOURCES — ONLINE ONLY

 Watch this eLesson: NAPLAN: Strategies and tips  
Searchlight ID: else-1688

*Note:* Your teacher may now set you a pre-test to determine how familiar you are with the content in this topic.

# 1.2 NAPLAN practice 1

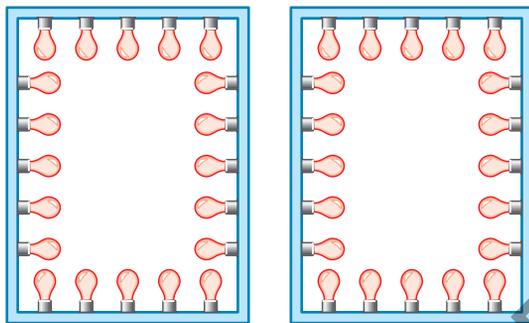
## 1.2.1 Set A (Calculator allowed)

1. The original Ferris Wheel opened to the public in Chicago in 1893. The distance around the outside of the ferris wheel is approximately three times the diameter. This ferris wheel has a diameter of 76.2 m. If you were to string lights to the outside edge of the ferris wheel, what would be the approximate length of lights needed to the nearest metre?



- A. 119 m                      B. 120 m  
C. 200 m                      D. 229 m

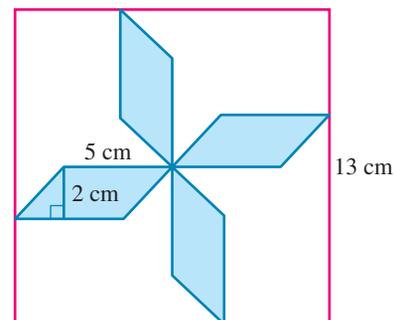
2. You want to string lights around two windows that each measure 90 cm by 120 cm. What is the minimum length of lights needed?



- A. 2.5 m                      B. 3.5 m  
C. 6.5 m                      D. 8.5 m

3. This quilt design is a square with four identical parallelograms. What is the unshaded area of the quilt design?

- A. 65 cm<sup>2</sup>                      B. 129 cm<sup>2</sup>  
C. 149 cm<sup>2</sup>                      D. 159 cm<sup>2</sup>



4. During the January holidays, Anna works in a café in Newcastle. She saves 75% of her earnings. If Anna earns \$750, what is the best estimate of the amount of money that she saves?

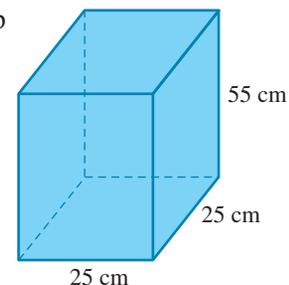
- A. \$550                      B. \$300  
C. \$150                      D. \$100

5. The measure of the interior angles of a triangle are  $2x$ ,  $6x$  and  $10x$ . What is the measure in degrees of the largest angle?

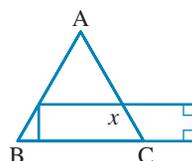
- A. 20                      B. 100  
C. 200                      D. 250

6. You have a rectangular storage box that is 55 cm high. You cut off a 5-cm strip around the top of the box. What will be the new volume of the box in cubic centimetres?

- A. 31 250 cm<sup>3</sup>                      B. 27 500 cm<sup>3</sup>  
C. 22 000 cm<sup>3</sup>                      D. 20 000 cm<sup>3</sup>



7. Triangle ABC is equilateral. What is the measure of angle  $x$ ?



8. A shop reduces the price of sports shoes by 40%. The new price is \$72. What was the original price of the sports shoes?

A. \$120                      B. \$115.20  
C. \$100.80                 D. \$100



9. High-speed label applicators can put labels onto envelopes at a rate of 200 per second. Which of the following represents the number in a day?

A.  $1.728 \times 10^5$             B.  $1.728 \times 10^6$   
C.  $1.728 \times 10^7$             D.  $1.728 \times 10^8$

10. Alex and his six friends played a game of laser tag in which the person with the lowest final score wins. The table shows the final scores for each person except Alice.

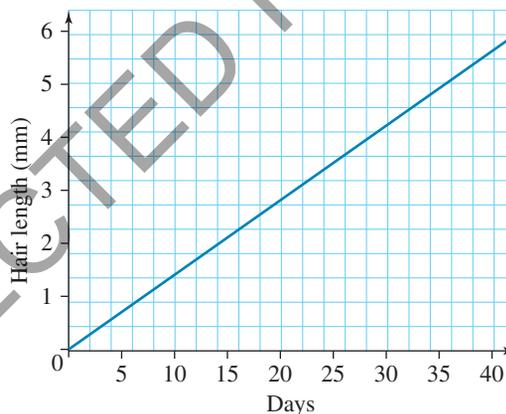
Player	Score
Alex	151
Ben	153
Julie	149
Lee	139
Alice	
Aysha	135
Keta	143



If Alice won the game and the range was 19, what was Alice's score?

A. 132                      B. 134                      C. 170                      D. 172

11. The following graph shows the growth rate of hair.

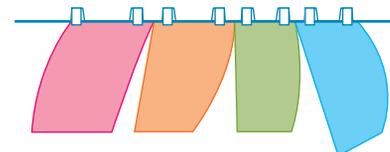


Based on the information in the graph, which figure best represents the number of millimetres that hair grows in 30 days?

A. 2.4 mm                      B. 3.6 mm                      C. 4.2 mm                      D. 5.7 mm

12. A Frisbee fits inside a cube. The top of the cube has a perimeter of 72 cm. If the Frisbee occupies  $250 \text{ cm}^3$ , how much space is left in the cube?

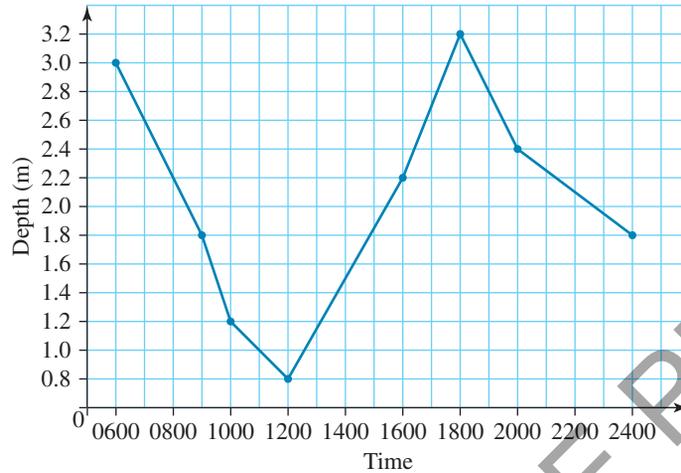
13. You are hanging towels on a clothes line. You use two pegs per towel. However, as you continue you realise that you will run out of pegs. Instead, you attach the end of the new towel to the old towel. In this way the towels share a peg.



If  $t$  represents the number of towels and  $P$  represents the number of pegs, which of these equations represents the number of pegs needed?

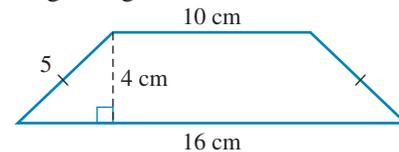
A.  $P = 2 \times t + 1$             B.  $P = 2 \times t + 2$             C.  $P = 3 \times t$                       D.  $P = t + 1$

14. A cyclist is competing in an 80-km race. The record time for the race is 2 hours and 40 minutes. What will his speed,  $s$  (in km/h), need to be to beat this record?
- A.  $s < 30$                       B.  $s > 30$                       C.  $s < 33$                       D.  $s > 20$
15. The depth of the water inside Blue Lagoon Bay has been recorded over a time period as shown on the following graph.



- What is the depth at 10 pm?
16. Sing and Nam each buy a health bar at lunchtime from the vending machine. There are four different types to choose from: ANZAC, chocolate chip, triple fruit and yoghurt. What is the probability that they choose exactly the same type of bar?
17. A triangle with two identical sides and an angle of  $119^\circ$  is:
- A. scalene and acute                      B. isosceles and acute  
C. isosceles and obtuse                      D. isosceles and right-angled

18. Alex wants to find the perimeter of the following isosceles trapezium. Which equation could Alex use to find the perimeter of the trapezoid?

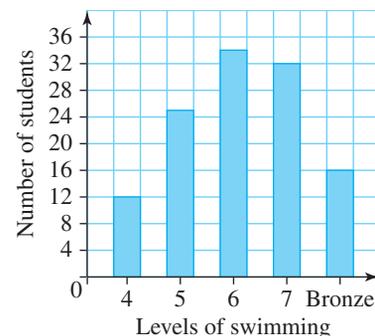


- A.  $P = 10 + 16 + 4 + 5$                       B.  $P = 10 + 16 + (2 \times 5)$   
C.  $P = 10 + 16 + 4 + 5$                       D.  $P = (10 + 16) \times 4 + 2$
19. Which point on the number line could represent the value of  $\sqrt{10}$ ?



- A. S                      B. P                      C. R                      D. Q
20. Lightning quickly heats the air, causing it to expand. This produces the sound of thunder. Sound travels approximately 1 km in 3 seconds. How far away is a thunderstorm when you notice a 2-second delay between the lightning and the sound of thunder?
- A. 1 km away                      B.  $\frac{1}{3}$  km away                      C.  $\frac{1}{2}$  km away                      D.  $\frac{2}{3}$  km away

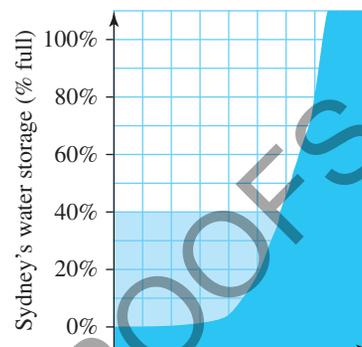
21. The bar graph shows 120 students in Year 8 and their different swimming levels. What percentage of students, to the nearest whole number, have reached the bronze level?



- A. 13%                      B. 15%  
C. 17%                      D. 19%

22. A reservoir has a total capacity of 1 068 000 megalitres. Suppose the water is to be drained by a pump at a constant daily rate. If  $\frac{9}{10}$  of the volume of the reservoir remains after the first day's pumping, how many megalitres (to the nearest megalitre) have been lost over 3 days? (Round to the nearest megalitre.)
- A. 772 740                      B. 320 400                      C. 289 428                      D. 1068

23. The following diagram shows the current storage level of a dam. If the total capacity is 1 670 500 megalitres, how much water is available (to the nearest ten thousand megalitres)?



- A. 700 000                      C. 669 000  
B. 670 000                      D. 660 000
24. One student in the Japanese language class is to make name tags, 50 mm × 50 mm square, from stiff card. The sheet of card measures 25 cm by 30 cm. What is the maximum number of name tags that can be made from one sheet?
- A. 10                              C. 30  
B. 20                              D. 40
25. The table shows the cost of hiring a band called The Hotshots.

The Hotshots band for hire	
Monday to Friday	\$55 per hour
Saturday	\$110 per hour
Acoustic rental	\$60 per booking
Deposit 20% of total cost	

A booking is made for Saturday for 4 hours, along with acoustic rental. Which of the following represents the deposit?

- A.  $(110 \times 4 + 60) \times \frac{20}{100}$                       B.  $(110 \times 4 + 60) \times \frac{100}{20}$   
C.  $(110 + 60) \times 4 \times \frac{20}{100}$                       D.  $(110 + 60) \times 4 \times \frac{100}{20}$
26. The Queenscliff Marine Centre hires a boat for 12 biologists to go diving for six days. The cost for hiring the boat for six days is usually \$880. The marine centre obtains a 10% discount. What is the cost per person with the discount?
- A. \$88                              B. \$74                              C. \$70                              D. \$66
27. The manager of a cinema complex records the number of people attending the 2 pm session at the cinema from Monday to Friday.

	Monday	Tuesday	Wednesday	Thursday	Friday
Number of adults	120	170	147	160	183
Number of children	37	42	52	62	85

What is the mean number of adults attending the 2 pm session for that week?

- A. 120                              B. 150                              C. 156                              D. 160
28. Two cars begin at the same time and travel the same distance of 160 km. One car travels at 80 km per hour and the other car travels at 100 km per hour. How many minutes after the faster car will the slower car complete the journey?
- A. 20 minutes                      B. 24 minutes                      C. 30 minutes                      D. 36 minutes
29. You can usually stay in the sun for 9 minutes before burning. Using a sun protecting lotion with an SPF 20 rating means that you can stay in the sun for  $9 \times 20$  minutes before burning. Your friend burns in 15 minutes. What sun protection factor would she need to use so that you can both stay for the same amount of time out in the sun? (Of course remember to wear a hat!)
- A. 8                                  B. 10                                  C. 12                                  D. 15

## 1.2.2 Set B (Non-calculator)

1. The height of the rectangular phone screen shown is 8 cm, and its area is  $80 \text{ cm}^2$ .

The perimeter of the screen is:

- A. 32 cm                      B. 36 cm  
C. 38 cm                      D. 40 cm

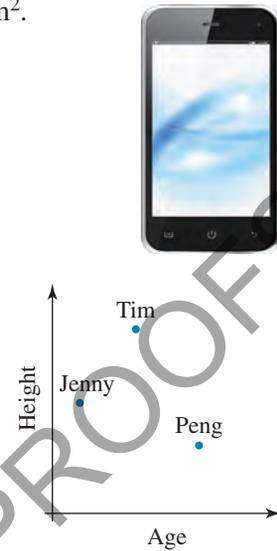
2. The sum of  $3x$  dollars and  $3x$  cents, in cents, is:

- A.  $3x + 3$                       B.  $3x$   
C.  $303x$                       D.  $3x + 3x$

3. The following graph shows the ages and heights of three Year 8 students.

Which one of the following statements is true?

- A. Tim is the eldest and the tallest.  
B. Jenny is older than Peng and younger than Tim.  
C. Peng and Tim are the same age.  
D. Peng is the shortest.



4. Two angles of a triangle are  $63^\circ$  and  $57^\circ$ . Which of the following could not be the measure of an exterior angle of the triangle?

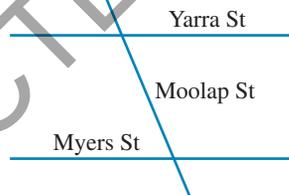
- A.  $110^\circ$                       B.  $117^\circ$                       C.  $120^\circ$                       D.  $123^\circ$

5. Susan claims that the weight of her cat is at most 8 kg. What inequality represents her claim?

- A.  $w < 8$                       B.  $w > 8$   
C.  $w \leq 8$                       D.  $w \geq 8$



6. The following diagram shows two parallel streets, Yarra Street and Myers Street, intersected by Moolap St. The obtuse angle that Myers Street forms with Moolap Street is four times the measure of the acute angle that Yarra Street makes with Moolap Street. What is the measure of the acute angle at Yarra Street and Moolap Street?



- A.  $30^\circ$                       B.  $36^\circ$                       C.  $108^\circ$                       D.  $144^\circ$

7. Ann and Jack are playing a game where Ann gives an Input number for Jack to put in to the same expression to give an Output number.

<b>Input</b>	1	2	3	4	?
<b>Output</b>	2	5	8	11	59

What is the Input number that Ann gave Jack for an Output number of 59?

- A. 18                      B. 20                      C. 22                      D. 24

8. Five students competed in a 200-m race. Their finishing times were 47.5 s, 46.8 s, 47.3 s, 48.0 s and 48.2 s. What is their average time for running a 200-m race, correct to 2 decimal places?



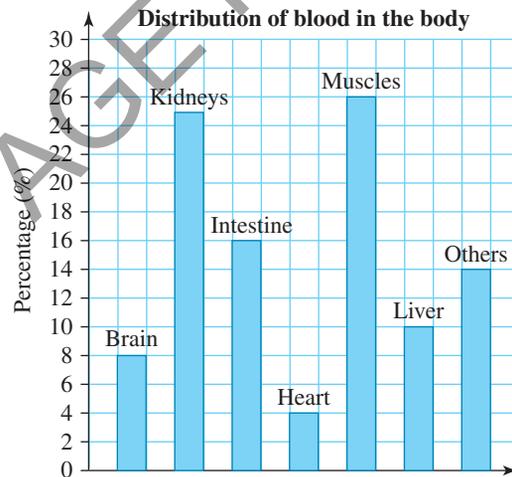
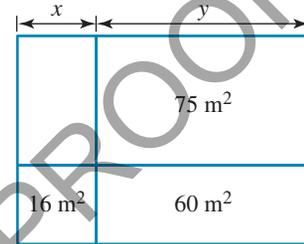


18. The Cheetahs and the Leopards are two school netball teams. The table shows the scores of their games.

	Game 1	Game 2	Game 3	Game 4	Game 5
Cheetahs	45	40	35	49	64
Leopards	28	50	27	52	63

Based on the scores in the table, which statement is true?

- A. The Cheetahs won 20% of the games.      B. The Cheetahs won 30% of the games.  
 C. The Leopards won 40% of the games.      D. The Leopards won 60% of the games.
19. The following is a diagram of a proposed floor plan for an office space. The proposed plan has four areas. Three of the areas are rectangular and the fourth is a square. What is the length of  $y$ ?
- A. 3 m      B. 5 m  
 C. 15 m      D. 25 m
20. Adults, on average, have 5.5 litres of blood in their bodies. How many millilitres of blood are in the kidneys?
- A. 25      B. 500  
 C. 1000      D. 1375
21. Anne and her friends decided to watch a DVD. They started it at 8.30 pm and it ran for 105 minutes. At what time did the DVD end?
- A. 9.30 pm      B. 9.35 pm  
 C. 10.05 pm      D. 10.15 pm
22. A 900-car parking lot is divided into 3 sections. There are 330 spots in Section 1. Section 2 holds 160 more than will fit into Section 3. How many spots are in Section 3?
23. A chef assembles a cake in  $\frac{2}{3}$  of an hour. If he works for  $7\frac{1}{2}$  hours, how many cakes will he fully assemble?
- A.  $10\frac{3}{4}$       B. 11  
 C.  $11\frac{1}{4}$       D. 12
24. A roll of material contains 6 metres of cloth. Four lengths, each of  $x$  centimetres, are cut from the cloth. What length of material (in centimetres) remains?
- A.  $6 - 4x$       B.  $4x - 6$   
 C.  $600 - 4x$       D.  $100(6 - 4x)$
25. Two straight roads cross. What is the size of angle  $A$ ?

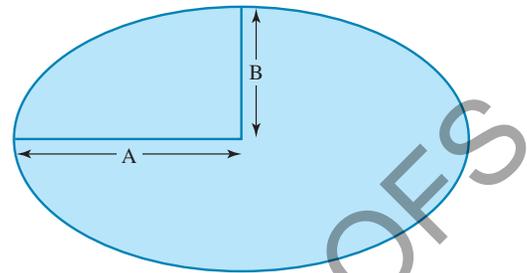




# 1.3 NAPLAN practice 2

## 1.3.1 Set C (Calculator allowed)

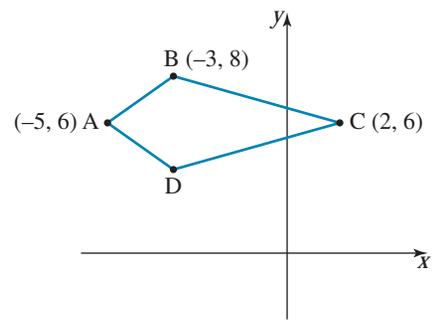
1. Each year, the area of tree logging in the Otway Ranges is approximately equivalent to clearing 200 football ovals. The area of a football oval is given by  $\text{Area} = 3.142 \times A \times B$  (see the diagram). If the width of the football oval is 110 m and the length is 160 m, approximately how many square metres of trees are felled each year in the Otways?



- A.**  $1.9 \times 10^4$                       **B.**  $2.76 \times 10^4$   
**C.**  $1.9 \times 10^6$                       **D.**  $2.76 \times 10^6$
2. A designer wants to enlarge a cylinder to 150% of its original dimensions. If the diameter of the cylinder is 37 mm, what will be the radius of the enlarged cylinder?
- A.** 27.75 mm                      **B.** 46.25 mm  
**C.** 55.5 mm                      **D.** 92.5 mm
3. A teenager is to receive 750 mL of saline solution. The drip rate is adjusted to 60 mL per hour. When will it be necessary to change the saline solution if the drip rate begins at 10.30 am?
4. The area of a square is 73 square metres. Which is the closest to the length of each side?
- A.** 8.4 m                      **B.** 8.5 m  
**C.** 8.6 m                      **D.** 8.7 m

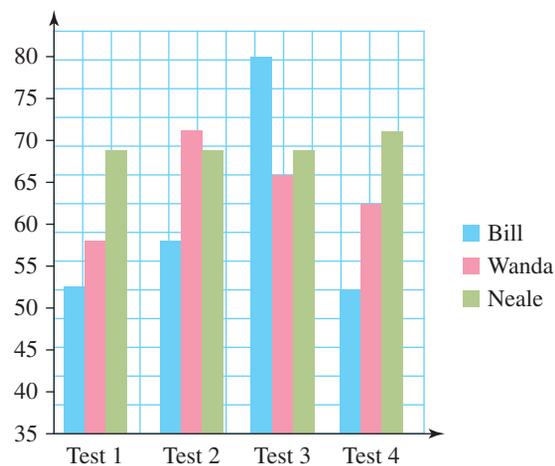


5. A kite is drawn with the coordinates of D being omitted. What are the coordinates of D?
- A.**  $(-3, -3)$                       **B.**  $(-3, -8)$   
**C.**  $(-3, 4)$                       **D.**  $(-3, 6)$

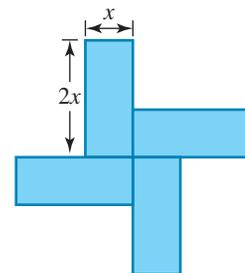
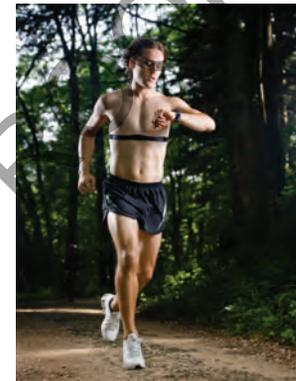


6. Your friend is planning a trip of 2320 km. The plan is to drive between 400 km and 480 km each day. At this rate, which of the following would be a reasonable number of days to complete the trip?
- A.** Fewer than 4 days                      **B.** Between 4 and 6 days  
**C.** Between 6 and 8 days                      **D.** More than 8 days
7. Last year there were 225 students at Top End High School. This year there are 20 per cent fewer students than there were last year. Approximately how many students are at Top End High School this year?
- A.** 205                      **B.** 245  
**C.** 270                      **D.** 180

8. This column graph shows four test results for Bill, Wanda and Neale. Which of the following options represents the test results?
- A.** Bill has a higher average than Neale but a lower average than Wanda.  
**B.** Bill has a lower average than Wanda but a higher average than Neale.  
**C.** Wanda has a higher average than Bill but a lower average than Neale.  
**D.** Wanda has a higher average than Neale and Bill.



9. A prepared workout on a treadmill consists of intervals of walking at various rates and angles of incline. A 3% incline means 3 units of vertical rise for every 100 units of horizontal run. My treadmill, when set at a 3% incline, has a horizontal run of 1.6 m. What will be the vertical rise?
- A. 4.8 m                      B. 48 cm  
C. 48 mm                      D. 4.8 mm
10. You are about to play your final game in a computer tournament. Your previous scores have been 134, 99, 109, 117 and 101. To win the tournament your average must be at least 114. What is the minimum score you must achieve in this game to win?
11. Suppose your heart rate is 72 beats per minute. How many days will it take your heart to beat 1 000 000 times? Round your answer to the nearest number of days.
12. A gardener wants to put 12 cm of mulch on his garden, whose dimensions are 20 m by 13 m. How many trailer loads will he require if his trailer holds 1.5 m<sup>3</sup>?
- A. 20                      B. 21                      C. 46                      D. 47
13. A machine packs grain at a rate of  $1\frac{1}{5}$  tonnes of grain per hour. How long will the machine take to pack 18 000 kg of grain?
- A. 15 hours                      B. 21 hours 6 minutes  
C. 21 hours 24 minutes                      D. 216 hours
14. In the following diagram, the shape is made from four identical rectangles. Each rectangle has a width of  $x$  and a length of  $2x$ . If the perimeter of the shape is 48 cm, what is the area of the shape?
- A. 112.5 cm<sup>2</sup>                      B. 72 cm<sup>2</sup>                      C. 60 cm<sup>2</sup>                      D. 180 cm<sup>2</sup>
15. A student recorded the times for 25 people running a 100-metre race. The stem-and-leaf diagram shows the results.  
Key: 13 | 7 represents 13.7 seconds



Stem	Leaf
13	7
14	2 3 4 4
14	5 5 7 7 8 9
15	0 1 2 2 3 4
15	5 5 6 7 9
16	0 1 2

What percentage of students ran for 14.8 seconds or less?

- A. 36%                      B. 40%                      C. 45%                      D. 48%
16. A student recorded the times for 25 people running a 200-metre race. The stem-and-leaf diagram shows the results.  
Key: 13 | 7 represents 13.7 seconds

Stem	Leaf
13	7
14	2 3 4 4
14	5 5 7 7 8 9
15	0 1 2 2 3 4
15	5 5 6 7 9
16	0 1 2

What percentage of students ran for more than 14.8 seconds but less than 15.5 seconds?

- A. 28%                      B. 32%                      C. 36%                      D. 40%

17. Tsing works in a bakery. One of her chores is to take cardboard sheets and to fold them into small and large trays. It takes 2 minutes to fold a small tray and 3 minutes to fold a large tray. Can she complete 80 small and 45 large trays in the allocated time of 3.5 hours?

- A. Yes, Tsing will finish in 2.6 hours.                      B. No, Tsing will take 4 hours and 25 minutes.  
 C. Yes, Tsing will finish exactly in 3.5 hours.            D. No, Tsing will take 4 hours and 55 minutes.

18. The maximum quantity of air that can fill your lungs is called Force Vital Capacity ( $L$ ). This can be modelled by the formula  $L = 4.43 \times H - 0.026 \times A - 2.89$  where  $H$  = your height (metres) and  $A$  = your age (years). If you are 165 cm tall and 15 years old, what is your capacity (to the nearest litre)?



- A. 4    B. 5  
 C. 70    D. 106

19. What is the surface area of a rectangular prism that has a length of 11 cm, a width of 6 cm and a height of 50 millimetres?

- A.  $170 \text{ cm}^2$                                   B.  $302 \text{ cm}^2$                                   C.  $330 \text{ cm}^2$                                   D.  $1832 \text{ cm}^2$

20. You have a piece of string 3.7 metres long. You cut it into 6 pieces of equal length to tie to 6 balloons, and there is 22 cm of string left. How long were each of the 6 pieces?

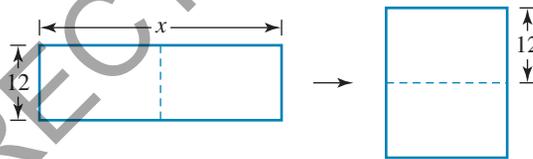
21. My teacher and I boarded a tram together. At the second stop, three people got on. At the third stop, three people got on and one got off. At the fourth stop, three got off. At the fifth stop, six people got off. At the sixth stop, one-half of the passengers got off and I was the only passenger left on the tram. How many passengers were on the tram when my teacher and I got on?

22. Examine the expression  $3k^2 + 6k - 5 + 6k^2 + 2$ . When it is simplified, which of the following is the equivalent expression?

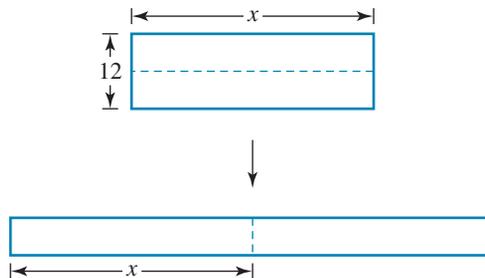
- A.  $3k^2 + 12k - 3$                           B.  $9k^2 + 6k - 3$                           C.  $9k^2 + 6k + 7$                           D.  $15k^2 + 6k - 3$

23. Jane and Lance each have a rectangular piece of paper of the same dimensions. The length is labelled  $x$  cm and the width is 12 cm. Jane and Lance each cut their paper in half in two different ways and then join the halves as illustrated.

Jane's cutting



Lance's cutting



Which of the following represents the sum of the perimeters of the two new designs?

- A.  $P = 5x + 48$                           B.  $P = 5(x + 12)$                           C.  $P = 6x + 60$                           D.  $P = 6(x + 12)$



26. A recipe for pizza dough requires a 20 cm × 40 cm rectangular pan. However, you have only a square pan, with dimensions of 25 cm × 25 cm. What will be the approximate difference in the size of your pizza due to using the square pan?

- A. Smaller by 22%      B. Larger by 22%      C. Smaller by 28%      D. Larger by 28%

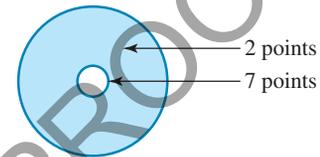
27. Alice ripped a piece of paper into three parts, and tore each of those parts into three more parts. If she repeated this action 3 more times, how many pieces of paper would she have?

- A. 15      B. 81      C. 243      D. 729

28. Ning was throwing darts at a target as shown at right. When his dart landed on or inside the circle (bullseye) of the target board, he earned 7 points. However, when his dart landed outside the circle he earned 2 points. After 50 throws his friend reported his score to be 140 points. Ning wanted to know how many bullseyes he had hit, but his friend did not know.

Let  $x$  = number of hits on the bullseye. Which of the following equations could be used to solve for  $x$ ?

- A.  $7x + 50 - x = 140$       B.  $7x + 2(50 - x) = 140$   
 C.  $7x + 2x = 140$       D.  $2x + 2(50 - 7x) = 140$

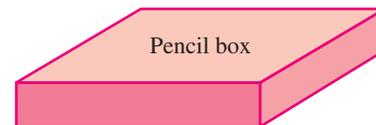
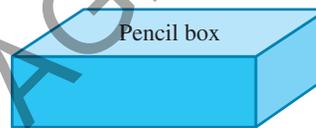


29. John bushwalked 36 km through the Blue Mountains in 3 days. On the first day he hiked 50% of the total distance. On the second day he hiked 25% of the distance that remained. How many kilometres did he hike on the third day?

- A.  $11\frac{1}{2}$       B.  $13\frac{1}{2}$       C.  $22\frac{1}{2}$       D. 27

30. Two pencil boxes as shown have the following information. The volume of one pencil box is 24 cm<sup>2</sup> more than the volume of the other pencil box. One box has two of its sides measuring 3 cm and 4 cm, while the other box has sides that measure 1.5 cm and 6 cm. The third sides of the boxes are the same length. What is that length?

- A. 2 cm      B. 4 cm  
 C. 6 cm      D. 8 cm



### 1.3.2 Set D (Non-calculator)

1. A 130 cm long strand of wire is cut into three pieces.

The longest piece is three times as long as the second shortest piece.

The second longest piece is three times as long as the shortest piece.

How long is the shortest piece?

- A. 18 cm      B. 10 cm      C. 17.5 cm      D. 15 cm

2. One litre of paint covers an area of 20 square metres.

How much paint will cover one square metre?

- A. 0.005 litre      B. 0.002 litre  
 C. 0.05 litre      D. 0.02 litre

3. A pancake recipe requires  $4\frac{1}{2}$  cups of milk. If you wish to make one-fifth of the recipe, how many cups of milk will you need?

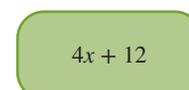
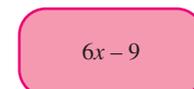
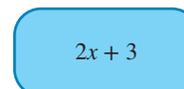
- A. 0.2      B. 0.5  
 C. 0.8      D. 0.9



4. Each card pictured is labelled with a value.

What is the mean value of these cards?

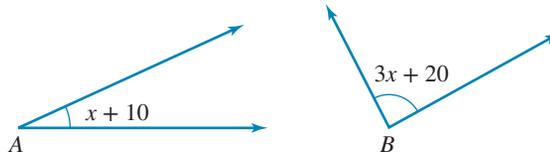
- A.  $12x + 6$   
 B.  $12x + 24$   
 C.  $4x + 6$   
 D.  $4x + 2$



5. In order to purchase a new iPod you must save at least \$260. What inequality represents the amount of money,  $m$ , that you must save?

- A.  $m \leq 260$       B.  $m < 260$       C.  $m \geq 260$       D.  $m > 260$

6. In the diagram below,  $\angle A$  and  $\angle B$  are complementary.



What is the measure of  $\angle B$ ?

- A.  $65^\circ$       B.  $45^\circ$       C.  $30^\circ$       D.  $15^\circ$

7. A swimming pool is being filled with water. The pool already contained 5000 litres of water. The table shows the number of litres of water in the pool after  $t$  hours.

Litres of water in pool ( $L$ )	Number of hours ( $t$ )
5000	0
7500	1
10000	2
12500	3
15000	4

Which rule can be used to determine the number of litres,  $L$ , of water in the pool after  $t$  hours?

- A.  $L = 2500t$       B.  $L = 5000t$       C.  $L = 5000t + 2500$       D.  $L = 5000 + 2500t$

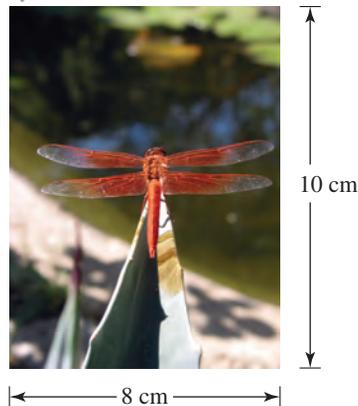
8. Anne wants to solve the equation shown.

$$2x - 3 = 13.$$

Which steps could she use to find the solution?

- A. Add 3 to both sides, then divide both sides by 2.  
 B. Subtract 3 from both sides, then divide both sides by 2.  
 C. Divide both sides by 2, then add 3 to both sides.  
 D. Multiply both sides by 2, then subtract 3 from both sides.

9. The photograph of a dragonfly is shown with its dimensions.



You decide to enlarge the photograph, and the new width is 12 cm. What is the new length?

- A. 14 cm      B. 15 cm      C. 16 cm      D. 17 cm

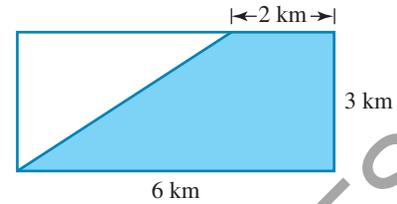
10. Madeline noticed that in one minute she blinked 50 times. At this rate, approximately how many days will it take her to blink 1 000 000 times?

A. 8                                      B. 10                                      C. 12                                      D. 14

11. A parcel of land is to be subdivided as shown below. The shaded area is to be sold.

What percentage of the total area does this represent?

A.  $33\frac{1}{3}$                                       B. 50  
C.  $66\frac{2}{3}$                                       D. 75

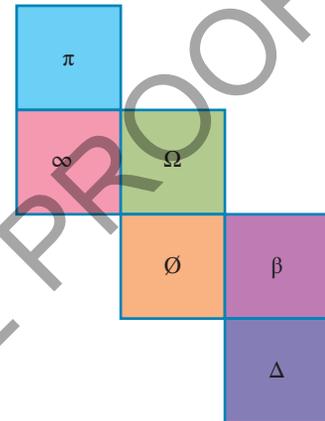
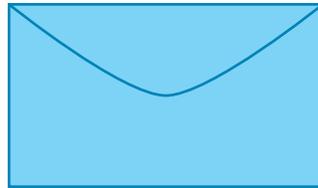


12. When the diagram shown is folded to make a cube, what symbol is on the face opposite the face marked  $\Delta$ ?

A.  $\beta$                                       B.  $\Omega$   
C.  $\emptyset$                                       D.  $\infty$

13. You have an envelope that has a perimeter of 35 cm. If the ratio of the length to the width is 4:3, what are the dimensions of the envelope?

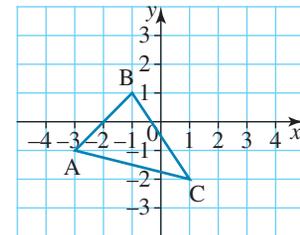
A.  $L = 20$  cm,  $W = 15$  cm                      B.  $L = 10$  cm,  $W = 7.5$  cm  
C.  $L = 15$  cm,  $W = 20$  cm                      D.  $L = 7.5$  cm,  $W = 10$  cm



14. A triangle ABC was drawn on coordinate axes as shown.

What would be the coordinates of the triangle reflected in the y-axis?

A. (1, 3)(1, 1)(-1, -3)                      B. (3, -1)(1, 1)(-1, -2)  
C. (-3, 1)(-1, -1)(1, 3)                      D. (3, 1)(1, 1)(1, -3)



15. Evaluate the following expression.

$$2\frac{2}{5} - 1\frac{2}{3}$$

16. An electronic device counted 4500 vehicles passing through an intersection during an 8-hour period. If the number of vehicles passing through the intersection per hour remains the same, what proportion can be used to find  $x$ , the number of vehicles that would be counted during a 10-hour period?

A.  $\frac{4500}{8} = \frac{x}{10}$                                       B.  $\frac{8}{4500} = \frac{x}{10}$   
C.  $\frac{8}{x} = \frac{10}{4500}$                                       D.  $\frac{8}{4500} = \frac{10}{x}$



17. John has five fewer marbles than Liam, and Tang has three times as many as John. If Liam has  $n$  marbles, which of the following represents the number of marbles that Tang has?

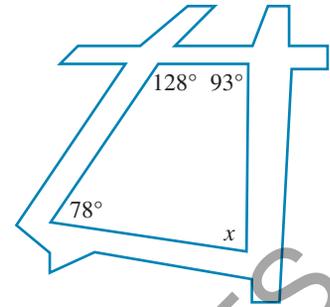
A.  $3n - 5$                                       B.  $3n$                                       C.  $5 - 3n$                                       D.  $3(n - 5)$

18. The directions for using a concentrated cleaning product say to add 3 capfuls of the product to every 4 litres of water. Which of the following equations can be used to calculate  $c$ , the number of capfuls of the product needed for 7 litres of water?

A.  $\frac{3}{4} = \frac{c}{7}$                                       B.  $\frac{3}{4} = \frac{c}{11}$                                       C.  $\frac{4}{3} = \frac{c}{7}$                                       D.  $\frac{4}{3} = \frac{c}{11}$

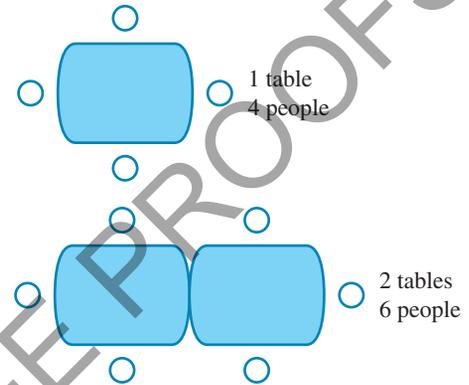
19. Intersecting paths have been constructed to surround a decorative garden bed. What is the angle measurement for  $x$ ?

A.  $128^\circ$                       B.  $102^\circ$   
 C.  $87^\circ$                          D.  $61^\circ$



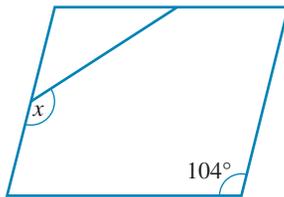
20. The diagrams show the seating arrangements that will be used if tables are placed end to end. Which formula represents the relationship between the number of people ( $P$ ) that can be seated and the number of tables ( $t$ ) placed end to end?

A.  $P = 4t$                         B.  $P = 3t$   
 C.  $P = 4t - 2$                  D.  $P = 2t + 2$



21. The diagram shows a rhombus. The midpoints of two of its sides are joined with a straight line. What is the measure of angle  $x$ ?

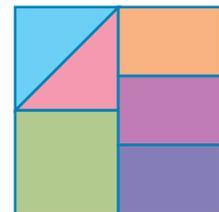
A.  $76^\circ$                          B.  $104^\circ$   
 C.  $142^\circ$                         D.  $152^\circ$



22. A square dart board is shown on the right.

Suppose a dart, thrown randomly, hits the board. Determine the probability of the dart's landing on a green segment.

A.  $\frac{7}{12}$                                 B.  $\frac{1}{8}$   
 C.  $\frac{7}{24}$                                 D.  $\frac{1}{14}$



23. In how many different ways could these plastic bottles be arranged in a line?



24. What is the solution for the following expression?

$$5 + \frac{70}{10} \times (1 + 2)^2 - 1$$

A. 95                                B. 71                                C. 67                                D. 46

25. A helicopter has a rotor that moves at a rate of 720 revolutions per minute. Through how many degrees does the rotor turn per second?

A. 0.03                              B. 12  
 C. 4320                               D. 259200



26. You counted a total of 40 goldfish in a pond in the Botanical Gardens. The gardener told you that the ratio of female fish to male fish was 3 : 5. What was the total of the number of male goldfish?

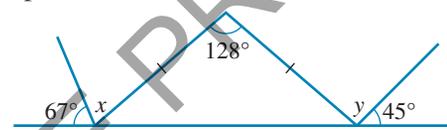
A. 24                                B. 25                                C. 26                                D. 30

27. Based on the table, which statement is true?

Polygons	
Number of sides ( $n$ )	Sum of interior angle measures ( $S$ )
3	$180^\circ$
4	$360^\circ$
5	$540^\circ$
6	$720^\circ$
7	$900^\circ$

- A. The sum of the interior angle measures decreases by  $\frac{1}{2}$  for each side increase of 1.  
 B. The sum of the interior angle measures increases by  $180^\circ$  for each side increase of 1.  
 C. The sum of the interior angle measures doubles for each side increase of 1.  
 D. The sum of the interior angle measures is a whole number multiple of  $360^\circ$ .
28. The sum of  $x$  and  $y$  is:

- A.  $196^\circ$                       B.  $180^\circ$   
 C.  $135^\circ$                       D.  $113^\circ$



29. A box is displayed on the top of a shop counter as shown in the photograph. Its dimensions are length =  $1\frac{1}{4}$  m, width =  $1\frac{2}{5}$  m and height = 0.8 m. What is the volume of the box?

- A.  $1.2\text{ m}^3$                       B.  $1.25\text{ m}^3$   
 C.  $1.4\text{ m}^3$                       D.  $1.65\text{ m}^3$



30. If two sides of a triangle are 12 cm and 20 cm, the third side must be:
- A. between and including 8 cm and 32 cm.  
 B. between but not including 8 cm and 32 cm.  
 C. greater than 8 cm.  
 D. less than 32 cm.

## 1.4 NAPLAN practice 3

assesson

### 1.4.1 Set E (Calculator allowed)

1. The students in a class measure their heights in cm. The following stem-and-leaf plot shows their heights.

Key: 13 | 5 means 135 cm.

Stem	Leaf
13	5 8
14	0 4 9
15	3 5 5
16	3

What is the mean height?

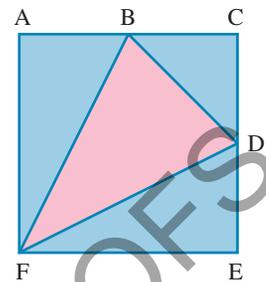
- A. 148 cm                      B. 149 cm                      C. 155 cm                      D. 163 cm

2. You have a rectangular box with a lid. The top of the lid has an area of 392 square centimetres. The ratio of the width to the length of the lid is 1 : 8. What are the dimensions of the lid?

A. 4 cm by 98 cm      B. 7 cm by 56 cm      C. 8 cm by 49 cm      D. 8 cm by 64 cm

3. The following is a design of a quilt square (ACEF) whose sides are 5 cm long. B and D are the midpoints of sides AC and CE respectively. What is the area of the triangle BDF?

A. 6.25      B. 9.375  
C. 12.5      D. 15.625



4. A photograph is placed on a card measuring 8.5 cm by 10 cm. A 1.5 cm edging is left all around. What area (in square cm) does the photograph cover?

A. 59.5 cm<sup>2</sup>      B. 49 cm<sup>2</sup>  
C. 46.75 cm<sup>2</sup>      D. 38.5 cm<sup>2</sup>

5. A student recorded the temperature outside her classroom every hour for one school day. She drew up the following table.

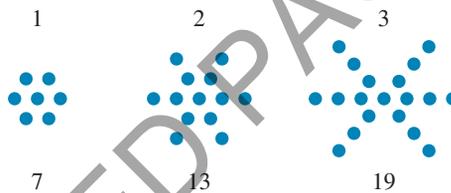
Time	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm
Temperature °C	11	13		34	36	33	29

If the temperature increased from 11 am to midday by  $41\frac{2}{3}\%$ , what was the temperature at 11 am?

A. 22°      B. 23°      C. 24°      D. 25°

6. The school bus took  $1\frac{1}{4}$  hours to travel 80 km. How far did it travel in  $2\frac{1}{2}$  hours?

7. Consider the following pattern.



Which one of the following equations could model the design, where  $C$  represents the total number of dots (the numbers shown below) and  $n$  represents the series number (the numbers shown above)?

A.  $C = 7n - 1$       B.  $C = 6n$       C.  $C = 6n + 1$       D.  $C = 6n - 1$

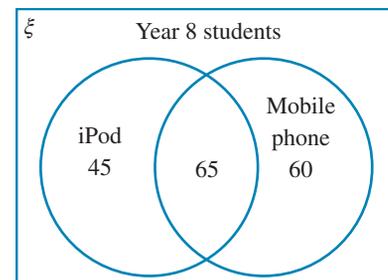
8. A bag of fertiliser is made by mixing nitrates, potash and phosphates in the ratio of 3 : 2 : 5. How much fertiliser will be produced if 15 kg of nitrates are used?

A. 22 kg      B. 25 kg      C. 45 kg      D. 50 kg

9. Fuel for a two-stroke engine is made by mixing petrol and oil in the ratio 30 : 1. If you have 250 mL of oil, how much petrol needs to be added to make a two-stroke mixture?

A. 0.12 litre      B. 1.2 litres      C. 7.5 litres      D. 8.3 litres

10. The Venn diagram shows how many of the 200 Year 8 students have an iPod only, a mobile phone only, or both an iPod and a mobile phone. Use the information in the diagram to find the probability that a student chosen at random has neither an iPod nor a mobile phone.



A.  $\frac{1}{30}$       B.  $\frac{3}{20}$   
C.  $\frac{6}{10}$       D.  $\frac{1}{20}$

11. The Orion Nebula is approximately  $1.5 \times 10^3$  light-years away from Earth. It is visible with the naked eye. One light-year is approximately  $9.5 \times 10^{12}$  km. What is the approximate distance in kilometres between Earth and the Orion Nebula?

A.  $1.425 \times 10^{15}$       B.  $1.425 \times 10^{16}$   
 C.  $1.1 \times 10^{11}$       D.  $6.33 \times 10^9$

12. An express train leaves Geelong at 8.55 am and arrives in Altona station at 9.37 am. If the train travelled 52 km, what was the train's average speed in km/h?

A. 98 km/h      B. 84 km/h  
 C. 74 km/h      D. 71 km/h

13. A packet of M&Ms contains red, orange, blue, green, yellow and brown chocolates. The probability of choosing a colour from the packet is shown in the table below.

Colour	Red	Orange	Blue	Green	Yellow	Brown
Probability	0.3	0.13	0.12		0.25	0.09

What is the probability of choosing a green M&M?

A. 0.9      B. 0.38  
 C. 0.11      D. 0.1

14. The following table shows the number of M&Ms of different colours in a particular bag.

Colour	Number	Expression
Red		$x$
Orange		$x - 2$
Blue		$x - 1$
Green		$x + 1$
Yellow		$x - 3$
Brown		$x + 2$
Total	33	

How many yellow M&Ms are in the bag?

A. 30      B. 20      C. 10      D. 3

15. In a bag of 200 jelly beans, the following distribution of colours was found. Brown 13%, yellow 14%, red 13%, blue 24%, orange 20%, green 16%. How many blue jelly beans are in the bag?

A. 20      B. 24      C. 48      D. 40

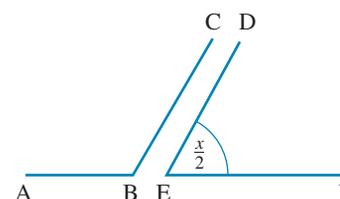
16. 'Dragon beards' is a special Chinese dish. The noodles are hand-pulled until they are extraordinarily fine. It has been calculated that a piece of pasta prepared with 1.5 kilograms of flour can make 144 000 hair-thin noodles, each 20 centimetres long. If you joined all the strands together, what would be their total length?

A. 28.8 km      B. 288 km      C. 28 800 km      D. 288 000 km

17. The angles below are supplementary. The measure of  $\angle DEF$  is  $\frac{x}{2}$ .

What expression represents the measure of  $\angle ABC$ ?

A.  $90 - \frac{x}{2}$       B.  $90 + \frac{x}{2}$   
 C.  $180 - \frac{x}{2}$       D.  $180 + \frac{x}{2}$

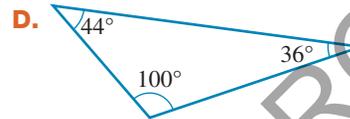
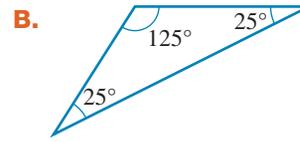
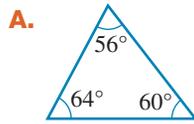


18. A driver drives 8 km south, then 6 km east followed by 2 km south. He then travels 3 km west. Next, in order to avoid a traffic jam, he turns and travels 6 km north. How many kilometres is the driver south of his starting point?

19. If the ratios of the sides of a quadrilateral are given in order as 3 : 3 : 4 : 4, what type of quadrilateral must it be?

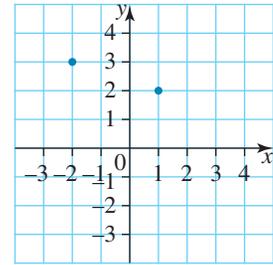
- A. Rectangle                      B. Square                      C. Kite                      D. Parallelogram

20. The angles of a triangle are in the ratio 3 : 5 : 7. Which diagram has angles in this ratio?



21. A trapezium was created on a Cartesian plane using the coordinates A(2, 0), B(-2, 0), C(-3, 4) and D(x, 4). What is the value for x if the area of the trapezium is 24 units?

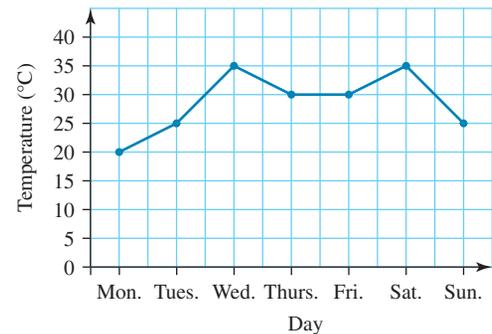
22. Ann is drawing a right-angled isosceles triangle on a coordinate grid. She has plotted two of the corners of the triangle at (-2, 3) and (1, 2). Which of the following coordinates could be the third corner of the right-angled isosceles triangle?



- A. (-1, 4)                      B. (4, 3)  
C. (0, -1)                      D. (3, 5)

23. Ann recorded the highest temperature each day over a 7-day period in February. Which statement describes the data?

- A. Median > mean                      B. Mean = mode  
C. Median = mean                      D. Median < mean



24. Ethan wants to solve for x in this equation.

$$1\frac{2}{5} - x \times \frac{2}{3} = 1\frac{2}{3}$$

Which step should he perform first?

- A. Divide both sides by  $\frac{2}{3}$ .  
B. Multiply both sides by  $\frac{2}{3}$ .  
C. Subtract  $1\frac{2}{5}$  from both sides.  
D. Add  $1\frac{2}{5}$  to both sides.

25. Al-Samaw'al was simplifying the expression  $6x - 3(x - 5)$ .

Which is the equivalent expression?

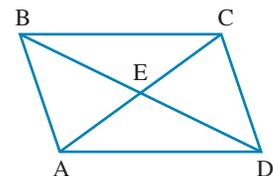
- A.  $3x - 5$                       B.  $3x + 5$                       C.  $3x - 15$                       D.  $3x + 15$

26. In the parallelogram ABCD below, AC and DB intersect at E.

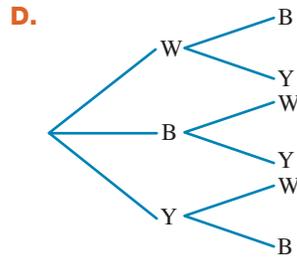
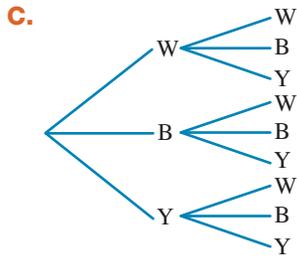
$$AE = 3x - 3 \text{ and } EC = x + 13.$$

What is the value of x?

- A. 8                      B. 16  
C. 20                      D. 40

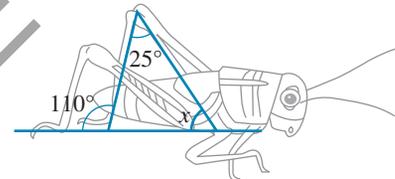




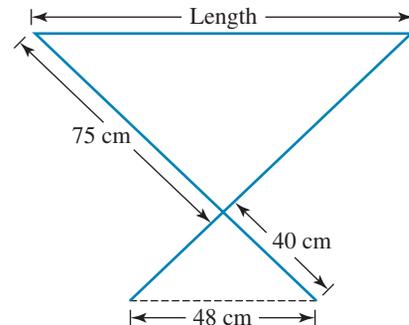


5. The human heart beats an average of 37800000 times in one year. Which of the following is an equivalent value?  
**A.**  $3.78 \times 10^{-7}$       **B.**  $3.78 \times 10^{-6}$       **C.**  $3.78 \times 10^6$       **D.**  $3.78 \times 10^7$
6. Which unit of measurement would be most appropriate for measuring the area of a page of newspaper?  
**A.**  $\text{mm}^2$       **B.**  $\text{cm}^2$       **C.**  $\text{m}^2$       **D.**  $\text{km}^2$
7. A hockey team played  $n$  games, losing five of them and winning the rest. The ratio of games won to games lost is:  
**A.**  $\frac{n}{5}$       **B.**  $\frac{n-5}{5}$       **C.**  $\frac{5}{n}$       **D.**  $\frac{5}{n-5}$

8. What is the value of the angle  $x$ ?  
**A.**  $85^\circ$       **B.**  $70^\circ$   
**C.**  $110^\circ$       **D.**  $130^\circ$



9. An ironing board with the measurements shown is advertised online. When the ironing board is set up, two similar triangles are formed. How long is the top?  
**A.** 90 cm      **B.** 62.5 cm  
**C.** 51.2 cm      **D.** 48 cm



10. The stem-and-leaf plot below shows the age of each member of a bicycle club.  
 Bike club members' ages  
 Key: 1 | 8 represents 18

Stem	Leaf
1	8 8 9
2	3 4 6 6 6 7 9
3	1 2 5 7 8
4	0 2 5
5	2 7

What is the range of the ages of the bicycle club members?

- A.** 57      **B.** 39      **C.** 36      **D.** 30

11. The stem-and-leaf plot below shows the age of each member of a running club.

Running club members' ages

Key: 1 | 3 represents 13

Stem	Leaf
1	3 5 6 7 8 8 9
2	0 1 2 3 4 4 4 5
3	0 2 3 4 5

What is the median age of the club members?

- A.** 22      **B.** 22.5      **C.** 24      **D.** 24.5

12. The *Chef and Cook* television show produces two square-based cakes. The small cake has a side length of 8 cm while the large cake has a side length of 16 cm. Which of the following statements is true?
- A. The area of the base of the large cake is 2 times the area of the small cake.  
 B. The area of the base of the large cake is 4 times the area of the small cake.  
 C. The area of the base of the large cake is 8 times the area of the small cake.  
 D. The area of the base of the large cake is 16 times the area of the small cake.

13. Calculate the value of the following.  
 $25 \times (2768 + 2768 + 2768 + 2768)$

14. The stage in the hall at League School has the shape of a quadrilateral, as shown.  
 Which of these are the most likely values of  $x$  and  $y$ ?



	$x$	$y$
A	30	160
B	45	145
C	63	117
D	72	118

15. The numbers of passengers on a train over a 20-day period were recorded as follows:  
 59, 65, 73, 83, 90, 83, 71, 92, 60, 58, 96, 66, 75, 76, 85, 77, 86, 79, 87, 79  
 The data are displayed below on a stem-and-leaf plot.

Key: 5 | 9 represents 59

Stem	Leaf
5	8 9
6	0 5 ?
7	1 3 5 6 7 9 9
8	3 3 5 6 7
9	0 2 6

What is the missing number?

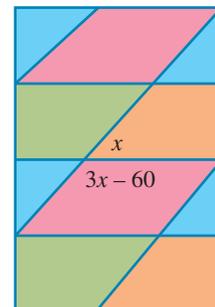
16. The table shows the results of a survey, which asked drivers how many accidents they had over the previous 5 years. What is the median number of accidents per year?

Number of accidents	0	1	2	3	4	5	6
Number of drivers	16	14	21	4	3	1	1

- A. 0.5      B. 1      C. 1.5      D. 2
17. Alex wants to know the answer to the following expression.  
 $(5 \times 10^4) + (2 \times 10^2) + (4 \times 10) = \square$   
 Which of the following is correct?  
 A. 502400      B. 52400      C. 50240      D. 5240
18. What is the missing number in the following equation?

$$\frac{4}{3} \div \frac{?}{3} = \frac{1}{8}$$

19. My mother is 4 times as old as I am. My sister is 75% of my age and 10% of my grandfather's age. My father is 50, which is 2 years older than my mother. How old are my sister and grandfather?
20. In the quilt design below, what is the measure of  $x$ ?
- A.  $10^\circ$       B.  $30^\circ$   
 C.  $40^\circ$       D.  $60^\circ$

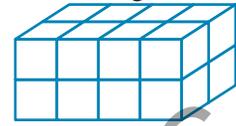


21. Is the following equation true or false?

$$12 + (5 \times 9) - (108 \div 2) = 3$$

22. The solid brick shown is made of small cubic bricks of sides 1 unit. When the large brick is disassembled into its component small bricks, the total surface area of all the small bricks is how much greater than the surface area of the large brick?

- A. 32                      B. 40  
C. 56                      D. 96



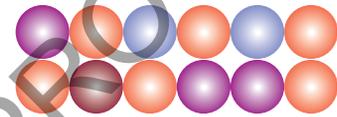
23. Jane ate 0.2 parts of pizza and her friend ate 0.02 parts of the same pizza. Find the ratio between the parts they ate.

- A. 10 : 1                      B. 5 : 2  
C. 1 : 1                      D. 1 : 10

24. A marble is selected at random.

What is the probability that the marble will not be blue?

- A.  $\frac{5}{6}$                       B.  $\frac{1}{6}$   
C.  $\frac{3}{14}$                       D.  $\frac{3}{7}$

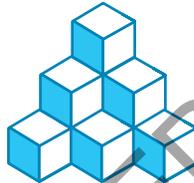


25. Write 70 as a percentage of 200.

26. If  $4x + 3 = 22$ , what is the value of  $4x - 3$ ?

- A. -3                      B. 0                      C. 16                      D. 19

27. If this pattern continues, how many cubes will it take to make 10 layers?



28. The first number in a pattern is 48. To go from one number to the next the rule is to divide by 4. What is the fourth number in the pattern?

- A.  $\frac{4}{3}$                       B.  $\frac{3}{4}$                       C.  $\frac{1}{3}$                       D.  $\frac{1}{4}$

29. Which of the following is equivalent to the expression  $2^6 \times 2^4$ ?

- A.  $2^{24}$                       B.  $2^{10}$                       C.  $4^{24}$                       D.  $4^{10}$

30. Andrew wants to find the value for the expression  $\frac{6x + 5}{8x + 5}$  when  $x = -10$ .

What is the value?

- A.  $\frac{2}{3}$                       B.  $\frac{22}{3}$                       C.  $\frac{11}{15}$                       D.  $\frac{211}{15}$

## 1.5 Review



# Answers

## 1.2 Set A (Calculator allowed)

- |                |       |           |                   |       |                         |
|----------------|-------|-----------|-------------------|-------|-------------------------|
| 1. D           | 2. D  | 3. B      | 4. A              | 5. B  | 6. A                    |
| 7. $120^\circ$ | 8. A  | 9. C      | 10. B             | 11. C | 12. $5582 \text{ cm}^3$ |
| 13. D          | 14. B | 15. 2.1 m | 16. $\frac{1}{4}$ | 17. C | 18. B                   |
| 19. C          | 20. D | 21. A     | 22. B             | 23. B | 24. C                   |
| 25. A          | 26. D | 27. C     | 28. B             | 29. C |                         |

## 1.2 Set B (Non-calculator)

- |                 |            |       |         |       |       |
|-----------------|------------|-------|---------|-------|-------|
| 1. B            | 2. C       | 3. D  | 4. A    | 5. C  | 6. B  |
| 7. B            | 8. 47.56 s | 9. C  | 10. C   | 11. B | 12. D |
| 13. B           | 14. D      | 15. C | 16. B   | 17. C | 18. C |
| 19. C           | 20. D      | 21. D | 22. 205 | 23. B | 24. C |
| 25. $107^\circ$ | 26. 40%    |       |         |       |       |

27. 7 pegs in each yellow bucket; 18 pegs in each blue bucket.

- |       |       |       |
|-------|-------|-------|
| 28. B | 29. D | 30. B |
|-------|-------|-------|

## 1.3 Set C (Calculator allowed)

- |       |           |          |         |             |       |
|-------|-----------|----------|---------|-------------|-------|
| 1. D  | 2. A      | 3. 11 pm | 4. B    | 5. C        | 6. B  |
| 7. D  | 8. C      | 9. C     | 10. 124 | 11. 10 days | 12. B |
| 13. A | 14. B     | 15. B    | 16. A   | 17. D       | 18. A |
| 19. B | 20. 58 cm | 21. 4    | 22. B   | 23. B       | 24. C |
| 25. D | 26. A     | 27. C    | 28. B   | 29. B       | 30. D |

## 1.3 Set D (Non-calculator)

- |       |       |                     |       |        |       |
|-------|-------|---------------------|-------|--------|-------|
| 1. B  | 2. C  | 3. D                | 4. D  | 5. C   | 6. A  |
| 7. D  | 8. A  | 9. B                | 10. D | 11. C  | 12. B |
| 13. B | 14. B | 15. $\frac{11}{15}$ | 16. A | 17. D  | 18. A |
| 19. D | 20. D | 21. C               | 22. C | 23. 24 | 24. C |
| 25. C | 26. B | 27. B               | 28. A | 29. C  | 30. B |

## 1.4 Set E (Calculator allowed)

- |       |       |       |       |       |           |
|-------|-------|-------|-------|-------|-----------|
| 1. A  | 2. B  | 3. B  | 4. D  | 5. C  | 6. 160 km |
| 7. C  | 8. D  | 9. C  | 10. B | 11. B | 12. C     |
| 13. C | 14. D | 15. C | 16. A | 17. C | 18. 4 km  |
| 19. C | 20. C | 21. 5 | 22. C | 23. A | 24. C     |
| 25. D | 26. A |       |       |       |           |

## 1.4 Set F (Non-calculator)

- |            |       |          |       |       |        |
|------------|-------|----------|-------|-------|--------|
| 1. C       | 2. D  | 3. C     | 4. C  | 5. D  | 6. B   |
| 7. B       | 8. A  | 9. A     | 10. B | 11. B | 12. B  |
| 13. 276800 | 14. C | 15. 6    | 16. C | 17. C | 18. 32 |
| 19. 9, 90  | 20. D | 21. True | 22. C | 23. A | 24. A  |
| 25. 35%    | 26. C | 27. 220  | 28. B | 29. B | 30. C  |