Primary – Junior Mathematics Diagnostic: Practice Questions

1. Josie works in a sports store. She receives 10% of the total sales each day. One day, she receives $50 for her portion of the total sales. What are total sales for that day?
   a) $37.80
   b) $43.75
   c) $280.00
   d) $500.00

2. Order from least to greatest : $5\frac{3}{4},\ 3\ \frac{4}{5},\ 3\frac{1}{5}, 4\ \frac{5}{6}$

   a. $5\frac{3}{4}, 3\ \frac{4}{5}, 3\frac{1}{5}, 4\ \frac{5}{6}$ b. $3\frac{1}{5}, 3\ \frac{4}{5}, 4\ \frac{5}{6}, 5\frac{3}{4}$

   c. $3\ \frac{4}{5}, 3\frac{1}{5},\ 4\ \frac{5}{6}, 5\frac{3}{4}$ d. $3\frac{1}{5}, 3\ \frac{4}{5},\ 5\frac{3}{4}, 4\ \frac{5}{6}$

3. The square chessboard has an area of 144 square centimetres. What is the length, in centimetres, of one side of the chessboard?

   a. 6 centimetres
   b. 12 centimetres
   c. 36 centimetres
   d. 72 centimetres

4. In a scale drawing, ½ cm represents 3 metres. If the same scale is used, how many centimetres will be needed to represent 24 metres?
   a. 2 centimetres
   b. 4 centimetres
   c. 8 centimetres
   d. 12 centimetres

Show your work.

5. The price of a share for a stock company XYZ at the beginning of the week was $24.75. Over the next five days the stock gained $2.50 on Monday, lost $3.25 on Tuesday, lost $0.75 on Wednesday, gained $1.25 on Thursday, and gained $4.75 on Friday. What was the price of the share of stock at the end of Friday?
   a. $12.25
   b. $25.75
   c. $29.25
   d. $37.25

Show your work.

6. Marc and Li Mang are playing Lucky Seven. Lucky Seven involves two players and is played with two dice. In the game, Player 1 wins if the sum of the two dice is 5, 6, 7, or 8 and Player 2 wins for any other sum.

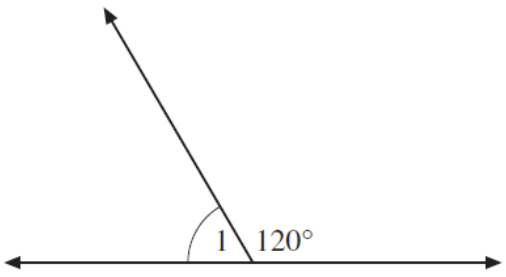
   If Marc is Player 1 and Li Man is Player 2, explain using numbers and words whether: Marc is more likely to win OR Li Ming is more likely to win OR the two players are equally likely to win. Show your work using numbers and words.

7. It takes a machine 12 minutes to fill 200 bottles of soda. At this rate, how many minutes will it take the machine to fill 500 bottles of soda
    a. 25 minutes
    b. 28 minutes
    c. 30 minutes
    d. 40 minutes

8. A farmer harvested 1400 kilograms of almonds from an 8-hectare orchard. Which proportion could be used to find *x*, the expected harvest from a 30-hectacre orchard?
    a. $\frac{8}{1400} = \frac{x}{30}$
    b. $\frac{8}{1400} = \frac{30}{x}$
    c. $\frac{30}{1400} = \frac{x}{8}$
    d. $\frac{30}{1400} = \frac{8}{x}$

9. Maggy earned a score between 75 and 89 on all of her previous spelling tests. She earned a score of 100 on her next spelling test. Which of the following statements is true?
    a. The mode will increase
    b. The mean will increase
    c. The mean will decrease
    d. The median will decrease

10. What is the measure of angle 1 in the figure below?



    a. 30^0
    b. 40^0
    c. 60^0
    d. 80^0

11. The following octagons are constructed with toothpicks. Paul is going to extend the pattern. Determine how many toothpicks Paul would need to create a figure with 21 octagons.

Figure 1

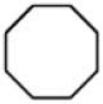
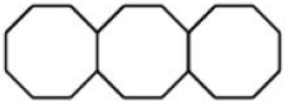


Figure 2

Figure 3



Show your work

12. Which ratios are equivalent to 6 out of 15?

i. 2: 5
ii. 3 out of 10
iii. 4 out of 10
iv. 10:25
v. 20:45

a. i, ii, iii
b. ii, iv, v
c. i, iii, iv
d. ii, iii, iv

Explain your thinking.

13. The table below shows the number of T-shirts Paul has of each colour.

Colour	Number of Shirts
Green	3
Red	4
White	5
Blue	8
Total	20

If Paul chooses a T-shirt without looking, what is the probability that it will be blue?

a. 4%
b. 8%
c. 40%
d. 60%

14. Mara plans to buy fabric for two sewing projects. One project requires 1/8 m of fabric, and the other requires 3/4 m of fabric. Each strip below represents 1 m of fabric. Which strip is shaded to show the total amount of fabric that Mara needs for her projects?

a. 

b. 

c. 

d. 

15. In the expression below, what is the value of x?

$(3x + 4) + 3(x-1) = 61$

a. 10
b. 9
c. 6
d. None of the above

Show your work.

16. The club members classify and count different types of trees in the area. Their observations are shown in the chart below:

Type of Trees	Maple	Ash	Oak	Birch	Pine	Spruce	Willow
Number of Trees	20	3	5	12	15	3	2

Each member is to do a presentation on one type of tree.
Each tree is assigned a number from 1 to 60. The numbers are recorded on separate pieces of paper and put into a brown bag.

What are the chances of a club member picking a pine tree for his or her presentation?

The chances are _____ in _____

Mr. Bates decides that he is going to do a presentation on maple trees. He removes the maple tree numbers from the bag.

Tina picks first. She picks a tree that has a 1 in 8 chance of being picked.

Tina picks a/an _____ tree

Explain how you know which type of tree Tina selected.

17. Solve the following. Show your work.

$3 + 6 \times (5+4) \div 3 - 7$

18. Scott has 5 green marbles, 8 red marbles, 2 purple marbles, and 6 blue marbles in a container. If he draws a marble at random from the container, what is the probability that he will NOT draw a blue marble?

a. $\frac{1}{4}$

b. $\frac{2}{7}$

c. $\frac{5}{7}$

d. $\frac{3}{4}$

Explain your thinking.

19. Which amount is greater? Tell how you know.

a. $\frac{1}{3}$ or $\frac{3}{8}$ a bag of popcorn

b. $\frac{2}{5}$ or $\frac{2}{3}$ of a container of juice

c. $\frac{5}{7}$ or $\frac{1}{2}$ of a length of string

20. Sandra had a recipe that required $\frac{1}{3}$ pounds of beef. Given that 1 pound = 453.6 grams, approximately how many grams of beef does she need?

a. 5

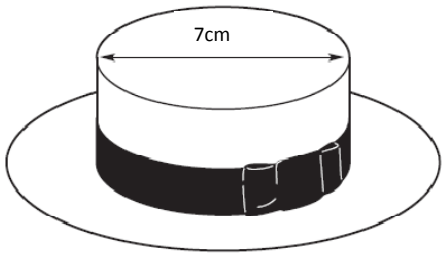
b. 151

c. 454

d. 1361

Show your thinking.

21. The top part of this hat is shaped liked a cylinder with a diameter of 7 cm.



Which measure is closest to the length of the band that goes around the outside of the hat?

a. 10.1 cm
b. 11.0 cm
c. 22.0 cm
d. 38.5 cm

Show your work.

22. A snack bar sells 5 items with a mean price of $0.60, as shown below

Snack Menu	
Chips	$0.50
Juice	$0.80
Apple	$0.60
Candy	$0.70
Gum	$0.40

Which pair of items could be added to the menu without changing the average price?

a. Banana ($0.60) and Soda (0.75)
b. Banana ($0.60) and Cookie (0.50)
c. Energy bar (0.45) and Cookie (0.50)
d. Energy bar (0.45) and Soda (0.75)

23. What is 1.03 as a fraction?

a. $\frac{13}{100}$

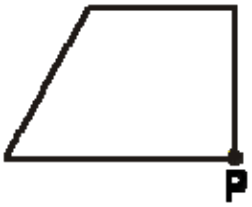
b. $1\frac{3}{10}$

c. $1\ \frac{3}{100}$

d. $\frac{103}{1000}$

Explain your thinking.

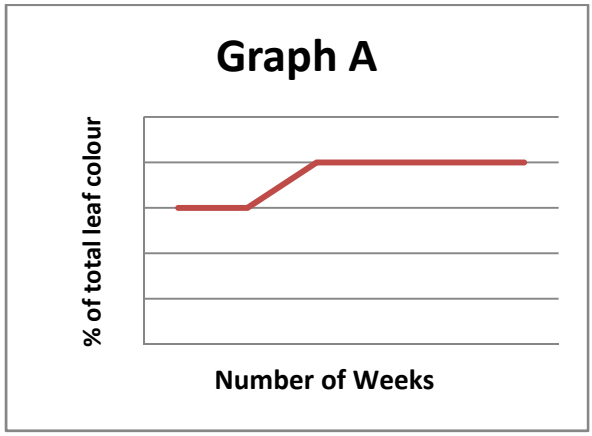
24. Draw a 90° clockwise rotation of this trapezoid around point P inside the box below.

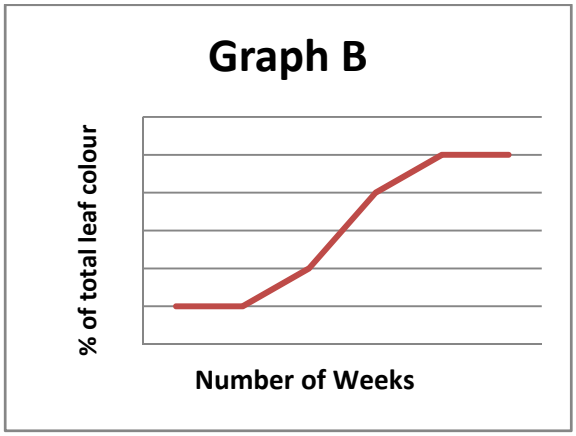


25. The artist liked to paint in the fall when the leaves were changing colour. Here is a chart that shows the changes in leaf colour over 6 weeks.

	Week					
Colour	1	2	3	4	5	6
Green	60%	55%	40%	20%	15%	5%
Yellow	5%	5%	10%	20%	25%	25%
Orange	15%	15%	20%	20%	20%	20%
Red	20%	25%	30%	40%	40%	60%

Match one leaf colour from the chart to Graph A and a second leaf colour from the chart to Graph B

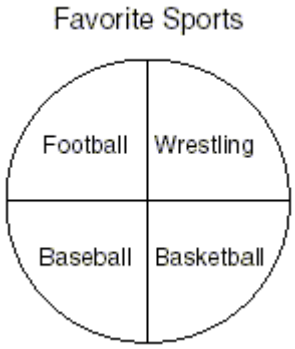




Explain your reasoning.

26. Of the 100 people An Li surveyed about their favourite sport, 45 selected football, 30 wrestling, 20 baseball and 5 selected basketball. Which circle graph best displays the data?

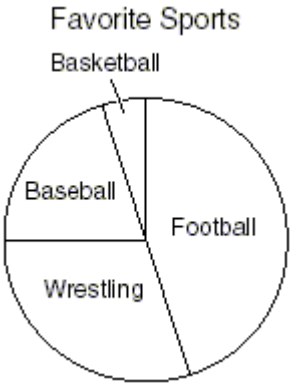
a.



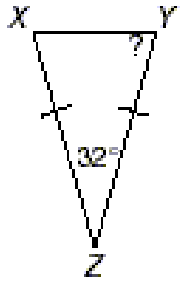
b.

c.

d.



27. Triangle XYZ is an isosceles triangle. If the measurement of angle Z is 32^0, what is the measurement of angle Y?



a. 32^0
b. 74^0
c. 148^0
d. 164^0

28. The chart below shows information about the mass of the human body.

	Female	**Male**
Muscle	36%	42%
Fat	24%	18%
Bone	18%	18%

Use the chart to solve the following problems. Remember to show your work:

a. How much of Hannah's 50kg mass is fat?

b. How much of Hannah's 50kg mass is muscle?

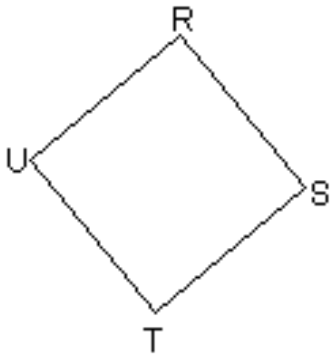
c. How much of Todd's 25kg mass is bone?

d. How much of Todd's 25kg mass is not muscle, fat, or bone?

29. What is the place value of the 3 in 548210.123

a. Ones
b. Tenths
c. Hundredths
d. Thousandths

30. The perimeter of rhombus RSTU is 144cm. What is the measure, in cm, of $\overline{ST}$?

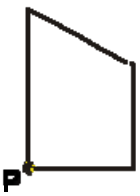


a. 12 cm
b. 36 cm
c. 72 cm
d. 288 cm

Show your thinking.

PJ Mathematic Diagnostic Practice Questions – Answer Key

1. d
2. b
3. b
4. b
5. c
6. Player 1
7. c
8. b
9. b
10. c
11. 148
12. c
13. c
14. c
15. a
16. (a) 15 in 60 **OR** in lowest terms: 1 in 4; (b) Oak tree
17. 14
18. c
19. a) 3/8 a bag of popcorn b) 2/3 of a container of juice c) 5/7 length of string
20. b
21. c
22. d
23. c
24.



25. graph a = Orange ; graph b = yellow
26. d
27. b
28. a 12 kg b. 18 kg c. 4.5 kg d.5.5 kg
29. d
30. b

25. graph a = Orange ; graph b = yellow
26. d
27. b
28. a 12 kg b. 18 kg c. 4.5 kg d.5.5 kg
29. d
30. b