

Upward Bound Prejunior Practical Mathematics Midterm

A study of the Pacific Longnose Parrot fish measured the length of parrot fish (*Hipposcarus longiceps*) observed underwater along a length of reef here in Pohnpei. The following length measurements in centimeters were made by the researchers.¹

Length /cm
13
20
18
15
15
20
20
15

- _____ Find the minimum length.
- _____ Find the maximum length.
- _____ Find the range for the length data.
- _____ Find the mode for the length data.
- _____ Find the median for the length data.
- _____ Find the mean (average) for the length data.
- Critical thinking: Adult *Hipposcarus longiceps* grows to lengths of 60 cm. What does the average length suggest about the age of the fish measured in this study?

Matching. Match the color to the correct hexadecimal RGB color command. Write the letter of for the correct hexadecimal RGB color command next to the color.

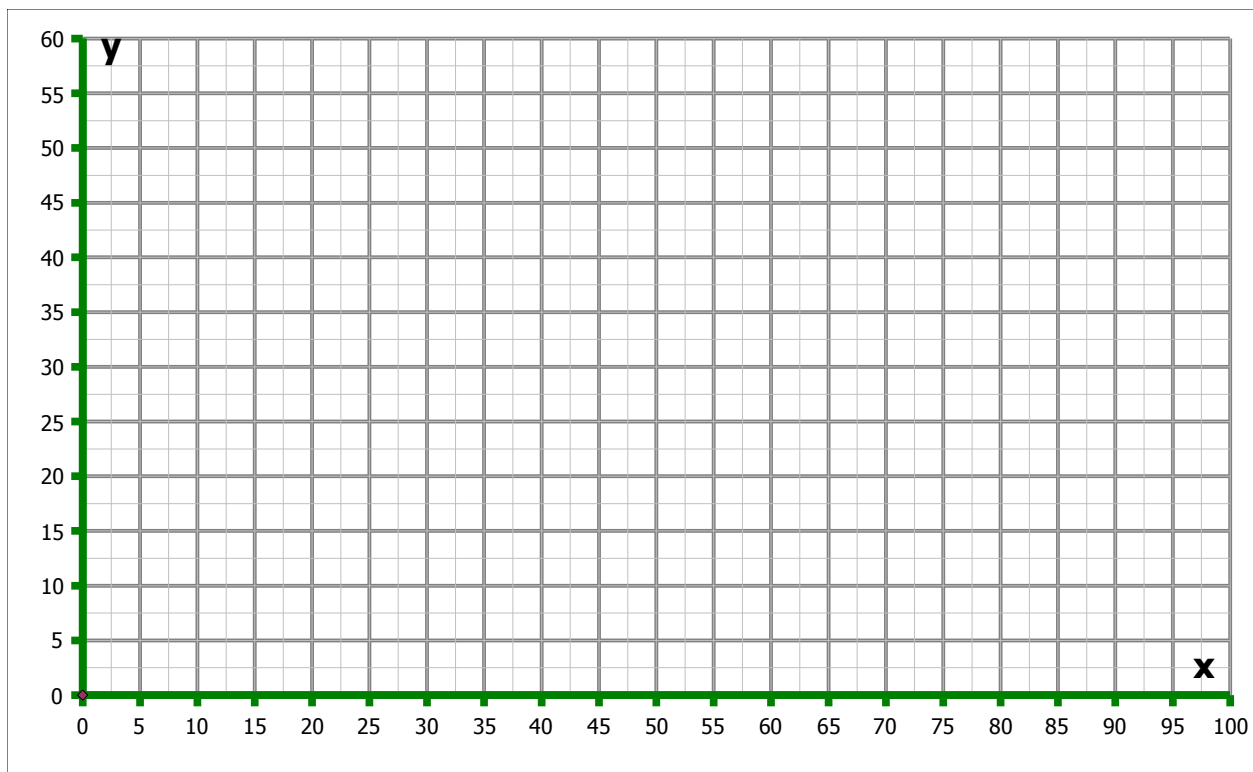
Color	Hexadecimal RGB color command
8. _____ Black	A. #000
9. _____ Blue	B. #00F
10. _____ Green	C. #0F0
11. _____ Red	D. #F00
12. _____ White	E. #FFF

- _____ What is $4 + 4$ in base 5 (pental)?
- _____ What is $6 + 6$ in base 16 (hexadecimal)?
- _____ What is $B + B$ in base 16 (hexadecimal)?

¹ Data courtesy of Conservation Society of Pohnpei and JAE.

16. The drop height and bounce height for a ball was measured and recorded in the following table. Plot the data on the graph provided.

Drop height/cm (x)	Bounce height/cm (y)
20	10
40	22
60	35
80	47
100	58



17. slope $m =$ _____ Determine the slope of the best fit line.

18. y-intercept = _____ Determine the y-intercept of the best fit line.

19. _____ Write out the slope-intercept equation for the line.

20. _____ If the ball is dropped from a height of 600 cm, how high will the ball bounce?

21. _____ If the ball is to bounce to a height of 430 cm, from how high must the ball be dropped?

The following table provides bounce coefficient values (slopes of the drop versus bounce line) for various balls. Use this table to determine the type of ball used in table for question sixteen above.

Ball type	Coefficient of bounce (slope m)
golf	0.81
super ball small	0.78
ping pong	0.70
super ball large	0.67
super ball medium	0.65
tennis	0.60

22. Based on the slope of your line, what type of ball was used to generate the data in the table in question number sixteen: _____

Formulas

Slope	Point-slope	Slope-intercept
$slope\ m = \frac{rise}{run} = \frac{(y_2 - y_1)}{(x_2 - x_1)}$	$(y - y_1) = m(x - x_1)$	$y = mx + b$