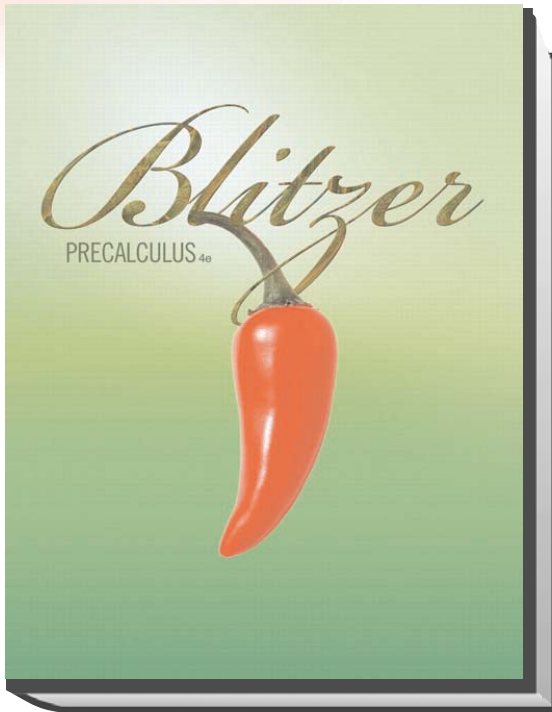


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C O R R E L A T E D T O

Indiana Math Standards Final Draft from March 2009

Precalculus

PEARSON

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Correlated to:

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PRE-CALCULUS	
Standard 1 Relations and Functions	
PC.1.1 Use paper and pencil methods and technology to graph polynomial, absolute value, rational, algebraic, exponential, logarithmic, trigonometric, inverse trigonometric and piecewise-defined functions, use these graphs to solve problems, and translate among verbal, tabular, graphical, and symbolic representations of functions using technology as appropriate.	SE/TE: 136-140, 153-159, 165-168, 170-172, 389-393, 404-406, 516-521, 537-541, 551-556
PC.1.2 Identify domain, range, intercepts, zeros, asymptotes, and points of discontinuity of functions represented symbolically or graphically, using technology as appropriate.	SE/TE: 157-159, 220-224, 303, 326-330, 342-345
PC.1.3 Solve word problems that can be modeled using functions and equations.	SE/TE: 102-105, 252-256, 370-374, 566-568
PC.1.4 Recognize and describe continuity, end behavior, asymptotes, symmetry, and limits and connect these concepts to graphs of functions.	SE/TE: 168-169, 286-287, 342-346, 404-405, 1051-1056
PC.1.5 Find, interpret, and graph the sum, difference, product, and quotient (when it exists) of two functions, indicating the relevant domain and range of the resulting function.	SE/TE: 171-172, 222-225, 227-229
PC.1.6 Find the composition of two functions, and determine the domain and the range of the composite function. Conversely, given a function, find two other functions the composition of which is the given one.	SE/TE: 220-221, 223-226, 228-229
PC.1.7 Define and find inverse functions, their domains and ranges, and verify whether two given functions are inverses of each other, symbolically and graphically.	SE/TE: 233-237, 239-240, 401-406
PC.1.8 Apply transformations to functions and interpret the results of these transformations verbally, graphically, and numerically.	SE/TE: 204-208, 210-215
Standard 2 Conics	
PC.2.1 Derive equations for conic sections and use the equations that have been found.	SE/TE: 874-878, 886-890, 900-905
PC.2.2 Graph conic sections with axes of symmetry parallel to the coordinate axes by hand, by completing the square, and find the foci, center, asymptotes, eccentricity, axes, and vertices (as appropriate).	SE/TE: 800-804, 890-893, 906-907, 914-918
Standard 3 Logarithmic and Exponential Functions	
PC.3.1 Compare and contrast $y = e$ with other exponential functions, symbolically and graphically.	SE/TE: 389-391, 393-394, 400-404, 408, 410

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PC.3.2 Define the logarithmic function $g(x) = \log_a x$ as the inverse of the exponential function $f(x) = a^x$. Apply the inverse relationship between exponential and logarithmic functions and the laws of logarithms to solve problems.	SE/TE: 400-403, 407-409, 413-417
PC.3.3 Analyze, describe, and sketch graphs of logarithmic and exponential functions by examining intercepts, zeros, domain and range, and asymptotic and end behavior.	SE/TE: 389-392, 404-405, 407
PC.3.4 Solve problems that can be modeled using logarithmic and exponential functions. Interpret the solutions, and determine whether the solutions are reasonable.	SE/TE: 436-439, 441-446
Standard 4 Trigonometry	
PC.4.1 Define and use the trigonometric ratios <i>cotangent</i> , <i>secant</i> , and <i>cosecant</i> in terms of angles of right triangles.	SE/TE: 490-493, 511, 542-544
PC.4.2 Model and solve problems involving triangles using trigonometric ratios.	SE/TE: 566-570, 572-573
PC.4.3 Develop and use the laws of sines and cosines to solve problems.	SE/TE: 644-648, 650-651, 656-660
PC.4.4 Define sine and cosine using the unit circle.	SE/TE: 475-477, 479-481
PC.4.5 Develop and use radian measures of angles, measure angles in degrees and radians, and convert between degree and radian measures.	SE/TE: 463-467, 512
PC.4.6 Deduce geometrically and use the value of the sine, cosine, and tangent functions at, 0 , $\pi/6$, $\pi/4$, $\pi/3$ and $\pi/2$, radians and their multiples.	SE/TE: 475-479, 492-494
PC.4.7 Make connections between right triangle ratios, trigonometric functions, and the coordinate function on the unit circle.	SE/TE: 475-478, 489-493, 501-504
PC.4.8 Analyze and graph trigonometric functions, including the translation of these trigonometric functions. Describe their characteristics (spread, amplitude, zeros, symmetry, phase, shift, vertical shift, frequency).	SE/TE: 516-521, 523-524, 526-530
PC.4.9 Define, analyze and graph inverse trigonometric functions and find the values of inverse trigonometric functions.	SE/TE: 550-556
PC.4.10 Solve problems that can be modeled using trigonometric functions, interpret the solutions, and determine whether the solutions are reasonable.	SE/TE: 566-570

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PC.4.11 Derive the fundamental Pythagorean trigonometric identities, sum and difference identities, half-angle and double-angle identities and the secant, cosecant, and cotangent functions and use these identities to verify other identities and simplify trigonometric expressions.	SE/TE: 626-630, 632-635
PC.4.12 Solve trigonometric equations and interpret solutions graphically.	SE/TE: 628-629, 633
Standard 5 Polar Coordinates and Complex Numbers	
PC.5.1 Define and use polar coordinates and relate polar coordinates to Cartesian coordinates.	SE/TE: 664-665, 667-672
PC.5.2 Represent equations given in Cartesian coordinates in terms of polar coordinates.	SE/TE: 667-668, 670-671
PC.5.3 Graph equations in the polar coordinate plane.	SE/TE: 675-679, 681-682
PC.5.4 Define complex numbers, convert complex numbers to polar form, and multiply complex numbers in polar form. PC.5.5 Prove and use De Moivre's Theorem.	SE/TE: 686-688, 690-691
Standard 6 Sequences and Series	
PC.6.1 Define arithmetic and geometric sequences and series.	SE/TE: 963-964, 972-973
PC.6.2 Derive and use formulas for finding the general term for arithmetic and geometric sequences.	SE/TE: 965-968, 973-977
PC.6.3 Develop, prove and use sum formulas for arithmetic series and for finite and infinite geometric series.	SE/TE: 965-968, 973-977
PC.6.4 Generate a sequence using recursion.	SE/TE: 954-955
PC.6.5 Describe the concept of the limit of a sequence and a limit of a function. Decide whether simple sequences converge or diverge, and recognize an infinite series as the limit of a sequence of partial sums.	SE/TE: 980-981, 1038-1039, 1050-1052, 1054-1055
PC.6.6 Model and solve word problems involving applications of sequences and series, interpret the solutions and determine whether the solutions are reasonable.	SE/TE: 968-969, 974-979
PC.6.7 Derive the binomial theorem by combinatorics.	SE/TE: 996-998, 1000
Standard 7 Vectors and Parametric Equations	
PC.7.1 Define vectors as objects having magnitude and direction and represent vectors geometrically.	SE/TE: 698-703, 706-708
PC.7.2 Use parametric equations to represent situations involving motion in the plane.	SE/TE: 925-927

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PC.7.3 Convert between a pair of parametric equations and an equation in x and y	SE/TE: 930-932
PC.7.4 Analyze planar curves, including those given in parametric form.	SE/TE: 928-932
PC.7.5 Model and solve problems using parametric equations.	SE/TE: 925, 931-932
Standard 8 Data Analysis	
PC.8.1 Use linear models using the median fit and least squares regression methods. Decide which among several linear models gives a better fit. Interpret the slope in terms of the original context	SE/TE: 178-179, 187-188
PC.8.2 Calculate and interpret the correlation coefficient. Use the correlation coefficient and residuals to evaluate a "best-fit" line.	SE/TE: 178-179, 187-188
Process Standards	
Problem Solving	
<ul style="list-style-type: none"> Build new mathematical knowledge through problem solving. 	SE/TE: 102-105, 252-256, 370-374, 566-569
<ul style="list-style-type: none"> Solve problems that arise in mathematics and in other contexts. 	SE/TE: 147-149, 374-375, 434, 472, 530-531, 654, 664, 908, 1028
<ul style="list-style-type: none"> Apply and adapt a variety of appropriate strategies to solve problems. 	SE/TE: 102-105, 252-256, 370-374, 566-569, 987-991
<ul style="list-style-type: none"> Monitor and reflect on the process of mathematical problem solving. 	SE/TE: 106-108, 256-257, 370-373, 988-993, 1018-1020
Reasoning and Proof	
<ul style="list-style-type: none"> Recognize reasoning and proof as fundamental aspects of mathematics. 	SE/TE: 586-588, 987-991, Appendix A, pages A1-A5
<ul style="list-style-type: none"> Make and investigate mathematical conjectures. 	SE/TE: 586-588, 987-991, Appendix A, pages A1-A5
<ul style="list-style-type: none"> Develop and evaluate mathematical arguments and proofs. 	SE/TE: 930-931, 990-993, 1015-1018, Appendix A, pages A1-A5
<ul style="list-style-type: none"> Select and use various types of reasoning and methods of proof. 	SE/TE: 586-588, 930-931, 987-991, Appendix A, pages A1-A5
Communication	
<ul style="list-style-type: none"> Organize and consolidate their mathematical thinking through communication. 	SE/TE: Writing in Mathematics activities 28, 100, 218, 300, 357-358, 412, 474, 500, 595, 741, 899
<ul style="list-style-type: none"> Communicate their mathematical thinking coherently and clearly to peers, teachers, and others. 	SE/TE: Group Exercises 30, 128, 301, 436, 536, 596, 625, 664, 756
<ul style="list-style-type: none"> Analyze and evaluate the mathematical thinking and strategies of others. 	SE/TE: 30, 334, 834, 989-990, 1050, 1055, Appendix A, pages A1-A5
<ul style="list-style-type: none"> Use the language of mathematics to express mathematical ideas precisely. 	SE/TE: 23-25, 39, 105, 151-153, 222-225, 388-392, 475-478, 1041

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Connections	
<ul style="list-style-type: none"> Recognize and use connections among mathematical ideas. 	SE/TE: 24-25, 122-123, 258, 278, 446, 475-476, 667, 699
<ul style="list-style-type: none"> Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. 	SE/TE: 24-25, 288, 401, 475-476, 667-669, 699-702, 925
<ul style="list-style-type: none"> Recognize and apply mathematics in contexts outside of mathematics. 	SE/TE: 199-200, 232-233, 370, 372-374, 431, 460, 596-598, 963-964, 1007-1008
Representation	
<ul style="list-style-type: none"> Create and use representations to organize, record, and communicate mathematical ideas. 	SE/TE: 23, 39, 105, 151-153, 182-183, 222-225, 388-392, 475-478, 806-810, 957
<ul style="list-style-type: none"> Select, apply, and translate among mathematical representations to solve problems. 	SE/TE: 23-25, 151-153, 222-225, 388-392, 400-404, 475-478, 806-810, 957-959
<ul style="list-style-type: none"> Use representations to model and interpret physical, social, and mathematical phenomena. 	SE/TE: 23-25, 151-153, 222-225, 388-392, 475-478, 806-810, 1041
Estimation and Mental Computation	
<ul style="list-style-type: none"> Know and apply appropriate methods for estimating the results of computations. 	SE/TE: 30, 178-179, 187-188
<ul style="list-style-type: none"> Use estimation to decide whether answers are reasonable. 	SE/TE: 1050-1055
<ul style="list-style-type: none"> Decide when estimation is an appropriate strategy for solving a problem. 	SE/TE: 25-28, 1015-1018,
<ul style="list-style-type: none"> Determine appropriate accuracy and precision of measurement in problem situations. 	SE/TE: 178-179, 187-188
<ul style="list-style-type: none"> Use properties of numbers and operations to perform mental computation. 	SE/TE: 3, 23-25
<ul style="list-style-type: none"> Recognize when the numbers involved in a computation allow for a mental computation strategy. 	SE/TE: 23-25
Technology	
<ul style="list-style-type: none"> Technology should be used as a tool in mathematics education to support and extend the mathematics curriculum. 	SE/TE: 139-140, 188, 254, 333, 408, 599, 669, 834, 861, 927
<ul style="list-style-type: none"> Technology can contribute to concept development, simulation, representation, communication, and problem solving. 	SE/TE: 35, 152, 188, 297, 416-417, 602, 763, 891
<ul style="list-style-type: none"> The challenge is to ensure that technology supports-but is not a substitute for- the development of skills with basic operations, quantitative reasoning, and problem-solving skills. 	SE/TE: 224, 247, 293, 308-309, 418-419, 611, 845, 907

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o Graphing calculators should be used to enhance middle school and high school students' understanding and skills.	SE/TE: 139-140, 258-259, 362, 527-529, 753, 849, 923
o The focus must be on learning mathematics, using technology as a tool rather than as an end in itself.	SE/TE: 224, 247, 323, 445, 630, 780, 903-904, 1039